CALS TEST NETWORK

AFCTN Test Report 93-021

AFCTB-ID 92-030

Technical Publication Transfer Test

Using:

OC-ALC/TISDTPP ATOS

MIL-D-28000 (IGES)
MIL-M-28001A (SGML)

Quick Short Test Report

06 MAY 1992

Prepared for

Electronic Systems Center

AFCTN Test Report
93-021

AFCTB-ID
92-030

TECHNICAL PUBLICATION TRANSFER TEST
USING:
OC-ALC/TISDTPP ATOS

MIL-D-28000 (IGES)
MIL-M-28001A (SGML)

QUICK SHORT TEST REPORT

06 MAY 1992

Prepared By
Air Force CALS Test Bed
Wright-Patterson AFB, OH 45433

AFCTB Contact
Gary Lammers
(513) 427-2295

AFCTN Contact
Mel Lammers
(513) 427-2295

DISCLAIMER

Available to the public from the
National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Rd.,
Springfield, VA 22161

CONTENTS

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Computer-aided Acquisition and Logistics Support (CALS) Test Network (AFCTN) is conducting test of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze OC-ALC/TISDTPP ATOS's interpretation and use of the CALS standards in transferring their technical publications data. OCALC/TISDTPP used its ATOS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFCTB 92-030

Date of Evaluation: 6 May 1992

Evaluator:
George Elwood
Air Force CALS Test Bed
HQ ESC/ENSP
4027 Colonel Glenn Hwy
Suite 200
Dayton OH 45431-1601

Data Originator:
OC-ALC/TILDTPP ATOS
Walt Myatt
Building 3001
Tinker AFB, OK 73145

Data Description: Technical Manual Test
1 Document Declaration file
1 Document Type Definitions (DTD)
Exchange Specification
(IGES) files

Data Source System:

IGES
HARDWARE
Unknown
SOFTWARE
Auto-Trol *S5000 v7.0*

Text/Standard Generalized Markup Language (SGML)
HARDWARE
Unknown
SOFTWARE
Unknown

Evaluation Tools Used:

MIL-STD-1840A (TAPE)
SUN 3/280
AFCTN Tapetool *v1.2.8 UNIX*
AGFA Compugraphics *CALS v40.4*

MIL-D-28000 (IGES)
SUN 3/60
Rosetta Technology *Preview v3.1*
IGES Data Analysis (IDA) *IGESview v2.0*
Sun SparcStation 2
International TechneGroup Incorporated (ITI) *IGES/Works*
Cheetah Gold 486
Autodesk *AutoCAD 386 R11*
CADKEY *Cadkey v4.0*
IDA *IGES Parser/Verifier*
Software Publishing Corporation (SPC) *Harvard Graphics v3.0*

MIL-M-28001 (SGML)
Cheetah Gold 486
Exoterica *XGMLNormalizer v1.2e3.2*
Datalogics *ParserStation v3.36*

Standards Tested:
MIL-STD-1840A
MIL-D-28000A
MIL-M-28001A

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was not marked with the magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in barrier sheet material, as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed a lack of the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Some 9-track tape units require this BPI to be set manually. Enclosed in the box was a packing list showing all files recorded on the tape.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The tape was run through the AFCTB *Tapetool v1.2.8* utility. No errors were encountered while evaluating the contents of the tape labels. No errors were reported when the tape was read using the AGFA *CAPS read1840A* utility.

3.2.2 Declaration and Header Fields

No errors were reported in the Document Declaration file header or the data file headers.

4. IGES Analysis

This tape contained eight IGES files. The files were evaluated using IDA's *Parser/Verifier* for CALS Class I standards. The parser and verifier log for some of the IGES files are included in the appendix to this report. The reported errors in all files are similar to those reported in the included logs.

The IGES files Start Sections were inspected for the required MIL-D-28000 statement per MIL-D-28000A, para 3.2.1.3.1. This was not found and is noted as an error.

The first reported error was the lack of a drawing or view. CALS Class I requires that one drawing and one view be defined. These are defined in entities 404 and 410, which are missing, see below:

```
ERROR   4031: CALS Class I requires that exactly one drawing be define.
ERROR   4032: CALS Class I requires that exactly one view be defined.
```

Entity type 106 reported many errors. The level for entity 106 must be zero per MIL-D-28000A, Table I. The Transformation Matrix must also be zero per the same table.

```
 *** Entity type: 106

ERROR   4045: Illegal level for CALS Class I specified at D     33.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     33.
```

```
                                        ┌──────Must be 0 (level)
                                        │                ┌──Must be 0 (Xformation matrix)
                                       vvv              vvvv
    106      17       0       1       2       0       31        000000001D     33
    106       0       0       6      11       0        0LNR PATH        1D     34
```

MIL-D-28000A Class I does not permit the use of entity type 402, the associativity instance entity.

```
 *** Entity type: 402

ERROR   4038: Entity type is not allowed in CALS Class I.
```

Files D001Q006, D001Q009, and D001Q010 also reported errors in the levels and transformation matrix values. MIL-D-28000A, Table I, requires that these values be zero.

```
 *** Entity type: 110

ERROR    4045: Illegal level for CALS Class I specified at D      11.
ERROR    4025: CALS Class I requires matrix pointer to be zero at D      11.
```

				Must be 0 (Level)		Must be 0 (Xformation Matrix)			
				vvv		vvv			
110	15	0	1	2	0	1		000000001D	11
110	0	0	1	0	0	0	LINE	1D	12

The files were translated, displayed and printed on the CAD systems available within the Air Force CALS Test Bed. All four of the systems were able to perform this function without a reported error. It was noted that the files had problems when displayed and printed. File D001Q003 appeared correct from all systems when compared to the provided hard copy. The remaining files had very noticeable problems relating to the text. It exceeded the boundaries defined on the drawing. The component marking fell outside the lines on all four systems in the AFCTB.

It was also noted that the start of the leader lines, on the left side of the drawings, began inside the text on files D001Q004 and D001Q005. File D001Q005 was read into ITI's *IGESWORKS*. One set of entities was extracted from this file for a detailed analysis. It was determined that the text box size caused the text to over write the line segement. From the defined start point of the text box, X -1.387, it moved to -0.607. This placed the right side of the text box .207 right of the end of the horizontal line segement. Note the detail of this in Autodesk's *AutoCAD* drawing. This problem appears to relate to fonts used during the generation of the drawings. This is detailed in the Appendix. The detailed drawing was made using SPC's *Harvard Graphics* and is not to scale. The locations are directly from the IGES PD data.

The IGES files did not meet the CALS MIL-D-28000 specification. Discussion with Auto-Trol indicated that an older version of software was used to generate these files. The basic AutoTrol IGES software is two versions above what was tested, and a CALS option was also added.

5. SGML Analysis

The DTD did not contain the necessary references to the included graphics files. The tape contained eight IGES files which were part of the document. The Text file was scanned and these external references were found. This information was added to the DTD and parsed using Exoterica's *XGMLNormalizer*. No errors were reported during this operation.

The required changes were made to the supplied DTD including adding the external references. This resulting DTD was then parsed using Datalogics' *ParserStation*. The DTD parsed with several minor noted errors. The external ISO reference set addresses the entity "inodot" in two different sets. The parser also noted that several entities were defined as empty. When the Text file was parsed using the menu system, an "out of memory" condition was reported. By running the parser from the command line, a successful parse was possible. USLynx uses the Datalogics parser as part of its system. Because of the memory problem, it was not possible to recreate the document using the USLynx software.

6. Raster Analysis

No Raster files were included on this tape.

7. CGM Analysis

No Computer Graphics Metafile (CGM) files were included on this tape.

8. Conclusions and Recommendations

In summary, the MIL-STD-1840A tape from OC-ALC/TISDTPP ATOS was basically correct. The tape could be read properly using the AFCTN *Tapetool* and AGFA *CAPS* software without a reported error.

The IGES files did not meet the CALS MIL-D-28000 specification. The Start Section information was missing, an illegal entity was used, and values for other entities were incorrect. The files generated in the AFCTB were not usable because of text overflow problems.

The DTD was not complete. The external entity, which defined the IGES files, were not included with the DTD or the Text files. When these entities were found and inserted into the DTD, the Text file parsed without reported error.

The tape did not meet the CALS MIL-STD-1840A requirements.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

```
CALS Test Network Catalog Evaluation - Version 1.2; Release Number 8

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information
    ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
                        for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Wed May  6 07:56:08 1992

MIL-STD-1840A File Catalog

File Set Directory: /cals/tapetool8/Set087

                                                                    Page: 1
```

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D001T001	Text	D/00260	02048/000019	Extracted
D001G002	DTD	D/00260	02048/000012	Extracted
D001Q003	IGES	F/00080	02000/000022	Extracted
D001Q004	IGES	F/00080	02000/000151	Extracted
D001Q005	IGES	F/00080	02000/000148	Extracted
D001Q006	IGES	F/00080	02000/000018	Extracted
D001Q007	IGES	F/00080	02000/000021	Extracted
D001Q008	IGES	F/00080	02000/000026	Extracted
D001Q009	IGES	F/00080	02000/000011	Extracted
D001Q010	IGES	F/00080	02000/000013	Extracted

```
Catalog Process terminated normally.
```

9.2 Tape Evaluation Log

```
CALS Test Network Tape Evaluation - Version 1.2; Release Number 8
  Standards referenced:
    ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
                        for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Wed May  6 07:55:45 1992

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1CALS01                                                              4

  Label Identifier: VOL1
  Volume Identifier: CALS01
  Volume Accessibility:
  Owner Identifier:
  Label Standard Version: 4

HDR1D001            CALS0100010001000000 92119 00000 000000

  Label Identifier: HDR1
  File Identifier: D001
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0001
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  92119
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000000
  Implementation Identifier:

HDR2D0204800260                                    00

  Label Identifier: HDR2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00
```

```
************ Tape Mark ***************

  Actual Block Size Found = 2048 Bytes.

  Number of data blocks read = 1.

************ Tape Mark ***************

EOF1D001            CALS0100010001000000 92119 00000 000001

  Label Identifier: EOF1
  File Identifier: D001
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0001
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  92119
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000001
  Implementation Identifier:

EOF2D0204800260                                    00

  Label Identifier: EOF2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************

HDR1D001T001        CALS0100010002000000 92119 00000 000000

  Label Identifier: HDR1
  File Identifier: D001T001
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0002
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  92119
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000000
  Implementation Identifier:
```

```
HDR2D0204800260                                    00

  Label Identifier: HDR2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************

  Actual Block Size Found = 2048 Bytes.

  Number of data blocks read = 19.

************ Tape Mark ***************

EOF1D001T001         CALS0100010002000000 92119 00000 000019

  Label Identifier: EOF1
  File Identifier: D001T001
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0002
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  92119
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000019
  Implementation Identifier:

EOF2D0204800260                                    00

  Label Identifier: EOF2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************

HDR1D001G002         CALS0100010003000000 92119 00000 000000

  Label Identifier: HDR1
  File Identifier: D001G002
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0003
```

```
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  92119
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000000
  Implementation Identifier:

HDR2D0204800260                                    00

  Label Identifier: HDR2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************

  Actual Block Size Found = 2048 Bytes.

  Number of data blocks read = 12.

************ Tape Mark ***************

EOF1D001G002          CALS0100010003000000 92119 00000 000012

  Label Identifier: EOF1
  File Identifier: D001G002
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0003
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  92119
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000012
  Implementation Identifier:

EOF2D0204800260                                    00

  Label Identifier: EOF2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************
```

```
HDR1D001Q003          CALS0100010004000000 92119 00000 000000

  Label Identifier: HDR1
  File Identifier: D001Q003
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0004
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  92119
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000000
  Implementation Identifier:

HDR2F0200000080                                    00

  Label Identifier: HDR2
  Recording Format: F
  Block Length: 02000
  Record Length: 00080
  Offset Length: 00

************ Tape Mark ***************

  Actual Block Size Found = 2000 Bytes.

  Number of data blocks read = 22.

************ Tape Mark ***************

EOF1D001Q003          CALS0100010004000000 92119 00000 000022

  Label Identifier: EOF1
  File Identifier: D001Q003
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0004
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  92119
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000022
  Implementation Identifier:

EOF2F0200000080                                    00
```

```
  Label Identifier: EOF2
  Recording Format: F
  Block Length: 02000
  Record Length: 00080
  Offset Length: 00

************ Tape Mark ***************

                    <<<<< PART OF LOG FILE REMOVED HERE >>>>>

************ Tape Mark ***************

############ End of Volume CALS01 ##############

############ End Of Tape File Set ##############

Deallocating /dev/rmt0...

Tape Import Process terminated normally.
```

9.3 Tape File Set Validation Log

```
CALS Test Network File Set Evaluation - Version 1.2; Release Number 8
  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Wed May  6 07:56:08 1992

MIL-STD-1840A File Set Evaluation Log

File Set: Set087

Found file: D001
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: Oaklahoma City ALC, OC-ALC/TISDTPP Building 3001, Tinker AFB, OK  73145
srcdocid: 5A9-8-8-8-8
srcrelid: NONE
chglvl: 0, 0, 19890622
dteisu: 19890815
dstsys: HQ ALFC/ENC WRIGHT PATTERSON AFB. OH
dstdocid: 5A9-8-8-8-8
dstrelid: NONE
dtetrn: 19920428
dlvacc: NONE
filcnt: T1  ,Q8,G1
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: MILB Technical Publication
docttl: UNKNOWN


Found file: D001T001
Extracting Text Header Records...
Evaluating Text Header Records...

srcdocid: 5A9-8-8-8-8
dstdocid: 5A9-8-8-8-8
txtfilid: W
doccls: UNCLASSIFIED
notes: The SGML Text File was converted from an ATOS MILB Tag Set to a MIL-M-28001 tag

Saving Text Header File: D001T001_HDR
Saving Text Data File: D001T001_TXT

Found file: D001G002
```

```
Extracting DTD Header Records...
Evaluating DTD Header Records...

srcdocid: 5A9-8-8-8-8
dstdocid: 5A9-8-8-8-8
notes: The SGML Text File was converted from an ATOS MILB Tag Set to a MIL-M-28001 tag

Saving DTD Header File: D001G002_HDR
Saving DTD Data File: D001G002_DTD

Found file: D001Q003
Renaming file from => /cals/tapetool8/Set087/D001Q003
             to => /cals/tapetool8/Set087/D001/D001Q003
Extracting IGES Header Records...
Evaluating IGES Header Records...

srcdocid: 5A9-8-8-8-8
dstdocid: 5A9-8-8-8-8
txtfilid: W
figid: 3-1
srcgph: H8700021
doccls: UNCLASSIFIED
notes: This figure is referenced on page 3-2.

Saving IGES Header File: D001Q003_HDR
Saving IGES Data File: D001Q003_IGS
```

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

```
Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.
```

10. Appendix B - SGML Parser Logs

10.1 XGMLNormalizer Parser Log

No reported errors after basic corrections.

10.2 Datalogics Parser Log

```
                SGML Document Type Definition Parser
                            Version 3.36
            Copyright (c) Datalogics 1988, 1989, 1990, 1991
                    An SGML System Conforming to
                  International Standard ISO 8879
                  Standard Generalized Markup Language

Log file: 'ocalc.LOG'
SDO File: 'ctndecl.sdo'
Namecase General is yes.
Namecase Entity is no.
Parsing DTD file: 'ocalc.dtd'
<!-- DTD FOR MIL-M-38784 CONFORMING TECHNICAL MANUALS -->
<!-- The following set of declarations may be referred to using a
public
entity as follows:
-->
<!DOCTYPE doc Parsing DOCTYPE DOC


<!ENTITY inodot DTD0143: Attempt to declare general entity name
         'inodot'
         more than once denied.
         In declaration: '<!ENTITY'.
         In declaration: '<!DOCTYPE'.
         in line 21 in file '\public\iso$amso.ent'
         in line 116 in file 'ocalc.dtd'
SDATA "[inodot]"--/imath =small i, no dot-->

DTD0095: Start tag for element 'LEP' cannot be omitted if the
         element had declared content (CDATA, RCDATA, EMPTY).
DTD0095: Start tag for element 'CONTENTS' cannot be omitted if the
         element had declared content (CDATA, RCDATA, EMPTY).
DTD0095: Start tag for element 'ILUSLIST' cannot be omitted if the
         element had declared content (CDATA, RCDATA, EMPTY).
DTD0095: Start tag for element 'TABLIST' cannot be omitted if the
```

```
         element had declared content (CDATA, RCDATA, EMPTY).
DTD0095: Start tag for element 'INDEX' cannot be omitted if the
         element had declared content (CDATA, RCDATA, EMPTY).
This DTD conforms to the ISO 8879 standard

DTO file 'ocalc.DTO' created

closing statistics:
    Capacity points:                  73384
    Bytes of DTO file string space:   18734
    SGML descriptor blocks:           7912

Document Type Definition is compliant and parsed normally.

Program status code: 0.

IPA0108:        *** SGML Instance Parser Log File ***
Source Document File:  'ocalc.txt'.
Job File:              'ocalc.jbf'.
DTD File:              ''.
SGML Declaration File: ''.

Reading File 'ocalc.jbf', File Type 'JOB FILE'.

     Concrete Syntax Settings In Effect For This Parse:
         NAMECASE GENERAL: YES.
         NAMECASE ENTITY:  NO.
         NAMELEN:          32.
         SHORTTAG:         YES.
Closed 'ocalc.jbf', File Type 'JOB FILE'.
Reading File 'ocalc.txt', File Type 'DIRECT INPUT FILE'.
   --> Scanned Up To Line 100 In ocalc.txt.
   --> Scanned Up To Line 200 In ocalc.txt.
   --> Scanned Up To Line 300 In ocalc.txt.
   --> Scanned Up To Line 400 ►n ocalc.txt.
   --> Scanned Up To Line 500 In ocalc.txt.
   --> Scanned Up To Line 600 In ocalc.txt.
   --> Scanned Up To Line 700 In ocalc.txt.
   --> Scanned Up To Line 800 In ocalc.txt.
   --> Scanned Up To Line 900 In ocalc.txt.
   --> ►canned Up To Line 1000 In ocalc.txt.
   --> Scanned Up To Line 1100 In ocalc.txt.
   --> Scanned Up To Line 1200 In ocalc.txt.
Closed 'ocalc.txt', File Type 'DIRECT INPUT FILE'.
Document Parsed Successfully, No Errors or Warnings.
```

11. Appendix C - IGES Data

11.1 D001Q003

11.1.1 IDA Parser Log

```
          *** IGES DATA FILE PARSING ***
          ***       AUGUST 1991      ***
          ***   IGES Data Analysis   ***
          ***     (708) 449-3430     ***

  Input file is \9230\q003.igs

  Checking conformance to CALS Class I

  Today is May 6, 1992  9:42 AM

 *** Count of Records Per Section in Data File ***

       Section        Records

       Start              1
       Global             3
       Directory        320   (    160 Entities)
       Parameter        205
       Terminate          1

 *** Start Section From Input File:

ATOS - Graphic.
1

 *** Global Section From Input File:

,,5HS5000,12Hh87000210000,21HAUTO-TROL S5000 V 7.0,11HVERSION 5.1,32,
1
8,23,11,52,,1.0,1,4HINCH,10000,1.000000,13H920427.163100,0.0001,
2
6.199911,,20HAUTO-TROL TECHNOLOGY,6,0;
3

 *** File and Product Name Information ***

    File name from sender     = 'h87000210000'
    File creation Date.Time   = '920427.163100'
 *  Model change Date.Time    = ''
 *  Author                    = ''
    Department                = 'AUTO-TROL TECHNOLOGY'
```

```
    Product name from sender = 'S5000'
 *  Destination product name = ''

 *** Parameter Delimiters ***

 *  Delimiter  = ','
 *  Terminator = ';'

 *** Originating System Data ***

    System ID              = 'AUTO-TROL S5000 V 7.0'
    Preprocessor version   = 'VERSION 5.1'
    Specification version = 6 (IGES 4.0)

 *** Precision Levels ***

    Integer bits =    32
    Floating point  -  Exponent =     8  Mantissa =    23
    Double precision - Exponent =    11  Mantissa =    52
NITPICK 1086: Real constant characteristics inconsistent with specifica
version.

 *** Global Model Data ***

    Model scale             =  1.0000E+000
    Unit flag               =  1
    Units                   =  'INCH'
    Line weights            =  10000
    Maximum line thickness  =  1.000000E+000
    Minimum line thickness  =  1.000000E-004
    Granularity             =  1.000000E-004
    Maximum coordinate      =  6.199911E+000

    Drafting standard applicable to original data is not specified.

 **  5 defaulted Global values.
    (*) Indicates a defaulted value.

 ********************************
 *** Entity Parsing Messages ***
 ********************************

  **     0 defaulted Parameter data values.

 *** Message Summary ***

1019: 1 Invalid Global parameters.
```

```
*** Error Summary ***

  0 fatal errors
  0 severe errors
  0 errors
  0 warnings
  0 cautions
  1 nitpicks
  0 notes
```

11.1.2 IDA Verifier Log

```
          *** IGES DATA FILE ANALYSIS ***
          ***       AUGUST 1991       ***
          ***   IGES Data Analysis    ***
          ***     (708) 449-3430      ***

 Input file is \9230\q003.igs

 Checking for conformance to CALS Class I

 Today is May 6, 1992  9:44 AM

*** File and Product Name Information ***

   File name from sender    = 'h87000210000'
   File creation Date.Time  = '920427.163100'
   Model change Date.Time   = ''
   Author                   = ''
   Department               = 'AUTO-TROL TECHNOLOGY'
   Product name from sender = 'S5000'
   Destination product name = ''

*** Parameter Delimiters ***

   Delimiter  = ','
   Terminator = ';'

*** Originating System Data ***

   System ID              = 'AUTO-TROL S5000 V 7.0'
   Preprocessor version   = 'VERSION 5.1'
   Specification version = 6 (IGES 4.0)
```

```
 *** Precision levels ***
    Integer bits =     32
    Floating point  -  Exponent =      8  Mantissa =     23
    Double precision - Exponent =     11  Mantissa =     52
NITPICK 2329: Real constant characteristics inconsistent with specification version.


 *** Global Model Data ***

    Model scale            =  1.0000E+000
    Unit flag              =  1
    Units                  =  'INCH'
    Line weights           =  10000
    Maximum line thickness =  1.000000E+000
    Minimum line thickness =  1.000000E-004
    Granularity            =  1.000000E-004
    Maximum coordinate     =  6.199911E+000

    Drafting standard applicable to original data is not specified.


 *** Status Flag Summary ***

  Blank status: Visible                      160
                Blanked                        0

  Independence: Independent                  158
                Physically Subordinate         2
                Logically Subordinate          0
                Totally Subordinate            0

  Entity use:   Geometry                     148
                Annotation                    12
                Definition                     0
                Other                          0
                Logical/Positional             0
                2D parametric                  0
                Not Specified                  0

  Hierarchy:    Structure DE applies             0
                Subordinate DE applies         160
                Hierarchy property applies       0
                Not Specified                    0
```

*** Entity Occurrence Counts ***

Entity	Form	Level	Count	Type
106	11	2	10	Copious data - Piecewise planar, linear string(2D path)
106	11	6	3	
110	0	2	33	Line
110	0	3	54	
110	0	4	46	
124	0	2	1	Transformation matrix
212	1	8	12	General note - dual stack dimension
402	7	3	1	Group without back-pointers instance

ERROR 4031: CALS Class I requires that exactly one drawing be defined.
ERROR 4032: CALS Class I requires that exactly one view be defined.

*** Entity Count by Level ***

Level	Count
2	44
3	55
4	46
6	3
8	12

*** Labeling Information ***

100% of the entities are labeled.

Unlabeled 0

Label	Count	Label	Count	Label	Count
LINE	133	MATRIX	1	LNR PATH	13
NOTE	12	GROUP	1		

*** Line Fonts Used in Data ***

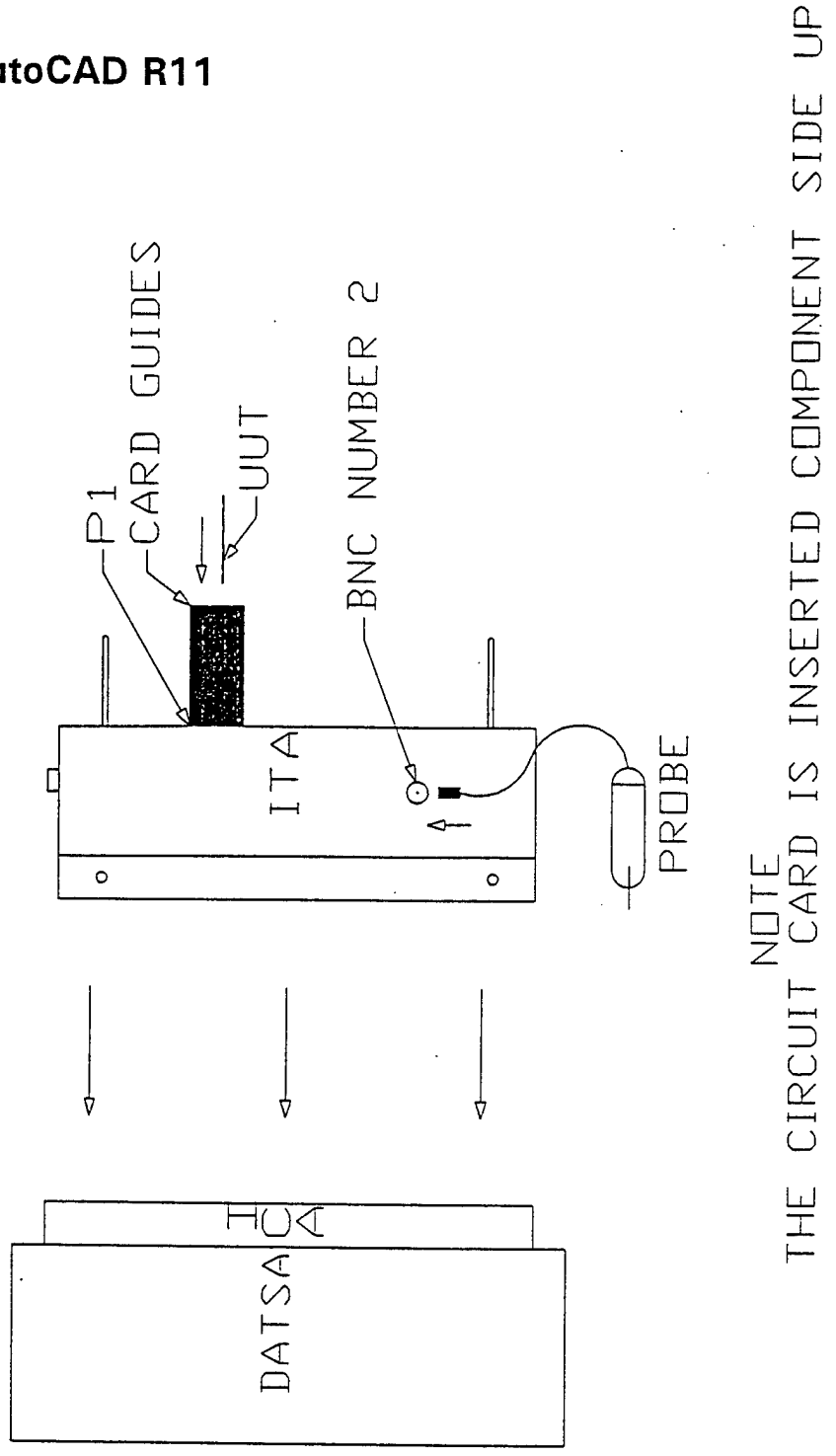
100	102	104	106	108	110	112	114	
-	-	-	-	-	-	-	-	Undefined
-	-	-	13	-	133	-	-	Solid
-	-	-	-	-	-	-	-	Dashed
-	-	-	-	-	-	-	-	Phantom
-	-	-	-	-	-	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	-	-	User defined

```
 116  118  120  122  124  125  126  128

  -    -    -    -    -    -    -    -   Undefined
  -    -    -    -    1    -    -    -   Solid
  -    -    -    -    -    -    -    -   Dashed
  -    -    -    -    -    -    -    -   Phantom
  -    -    -    -    -    -    -    -   Center-line
  -    -    -    -    -    -    -    -   Dotted
  -    -    -    -    -    -    -    -   User defined

 130  132  134  136  138  140  142  144

  -    -    -    -    -    -    -    -   Undefined
  -    -    -    -    -    -    -    -   Solid
  -    -    -    -    -    -    -    -   Dashed
  -    -    -    -    -    -    -    -   Phantom
  -    -    -    -    -    -    -    -   Center-line
  -    -    -    -    -    -    -    -   Dotted
  -    -    -    -    -    -    -    -   User defined

 *** Line Widths Used in Data ***

     Weight       Count      Width

  Defaulted       160       (0.0001)

 *** Colors Used in Data ***

  Defaulted       160


 ********************************
 ******  ENTITY ANALYSIS  ******
 ********************************


 *** Entity type: 106

ERROR   4045: Illegal level for CALS Class I specified at D     33.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     33.
ERROR   4045: Illegal level for CALS Class I specified at D     35.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     35.
ERROR   4045: Illegal level for CALS Class I specified at D     37.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     37.
ERROR   4045: Illegal level for CALS Class I specified at D     43.
ERROR   4045: Illegal level for CALS Class I specified at D     45.
ERROR   4045: Illegal level for CALS Class I specified at D     51.
```

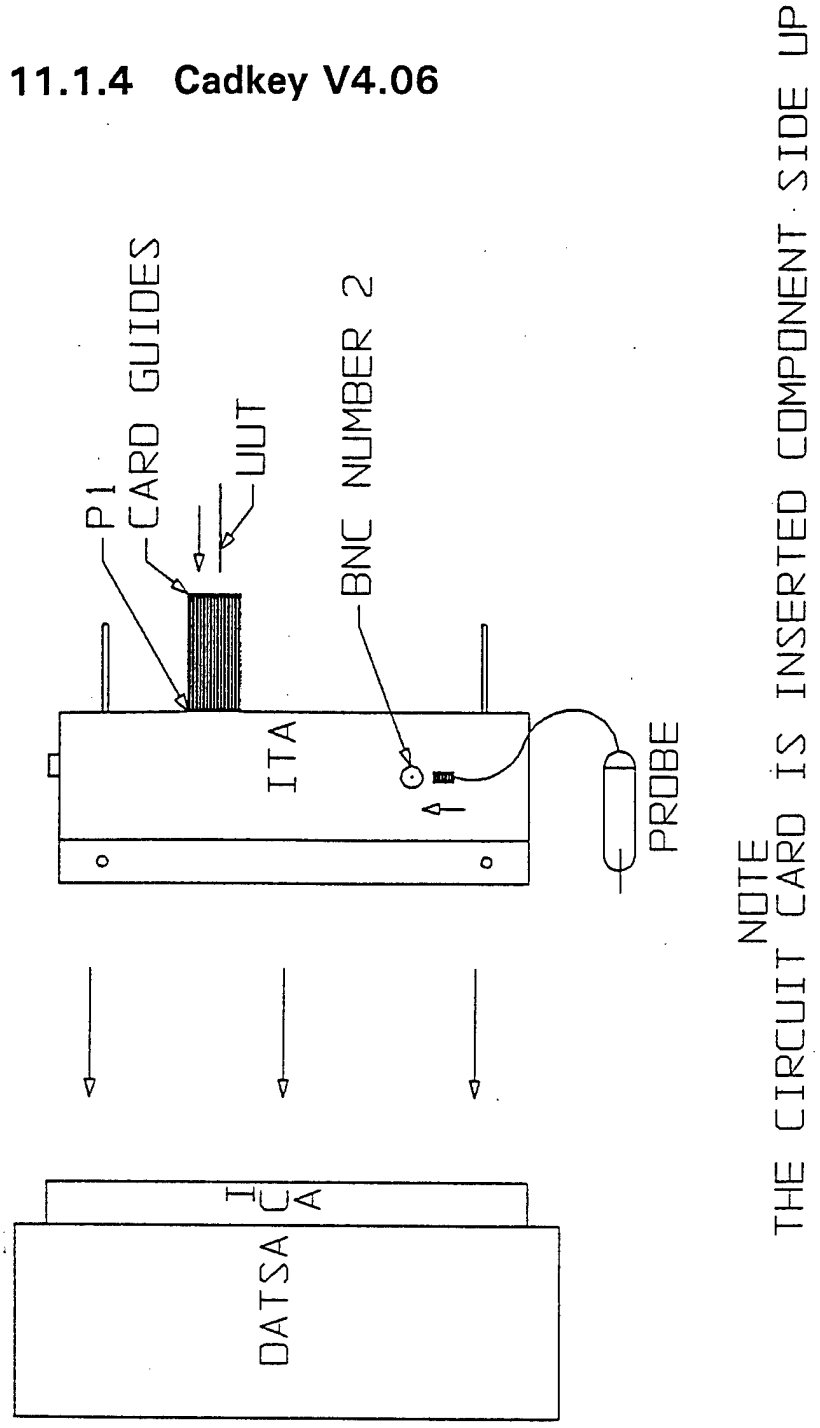
```
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     51.
ERROR   4045: Illegal level for CALS Class I specified at D     53.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     53.
ERROR   4045: Illegal level for CALS Class I specified at D     69.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     69.
ERROR   4045: Illegal level for CALS Class I specified at D     71.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     71.
ERROR   4045: Illegal level for CALS Class I specified at D     73.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     73.
ERROR   4045: Messages regarding illegal levels suppressed.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     75.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     77.
ERROR   4025: Messages regarding non-zero matrix pointers suppressed.

 *** Entity type: 110

  --   133 lines averaging 4.814865E-001 units --

 *** Entity type: 124

1 transformation matrices, 0 non-zero translations.

 *** Entity type: 212

       12 text strings in data file.
       Average text aspect ratio in file is 1.0000000.
       Minimum text aspect ratio in file is 1.0000000.
       Maximum text aspect ratio in file is 1.0000000.

       FONTS USED IN FILE

       FONT    COUNT    NAME

          1       12    Default ASCII Style

 *** Entity type: 402

ERROR   4038: Entity type is not allowed in CALS Class I.

 *** Message Summary ***

4000: 2 Miscelaneous CALS messages
4013: 43 Non-zero matrix pointers
4018: 1 Illegal entity types
4020: 158 Illegal levels
```

```
*** Error Summary ***

  0 fatal errors
  0 severe errors
204 errors
  0 warnings
  0 cautions
  1 nitpicks
  0 notes

*** End of Analysis of \9230\q003.igs ***
```

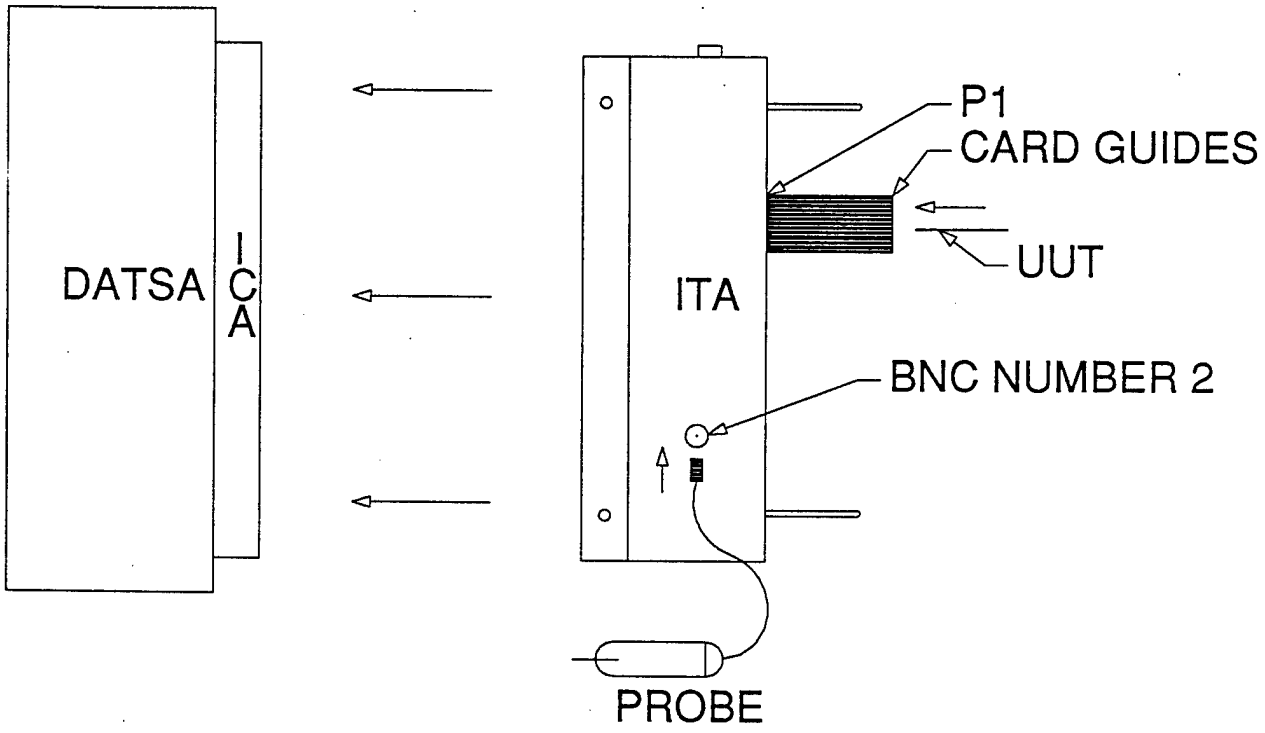
11.1.3 AutoCAD R11



11.1.4 Cadkey V4.06

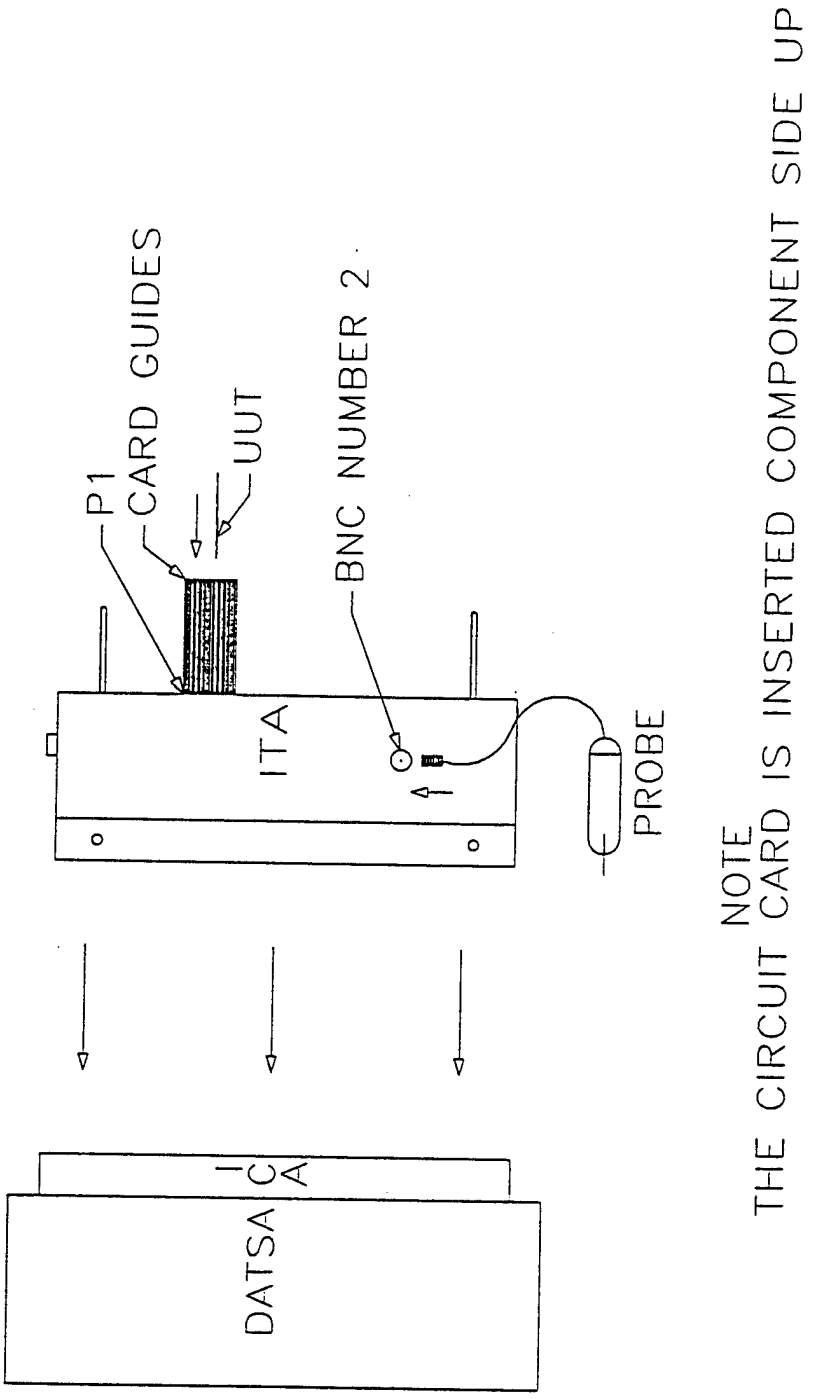


11.1.5 IGESVIEW



THE CIRCUIT CARD IS INSERTED COMPONENT SIDE UP

11.1.6 Preview



11.2 D001Q004

11.2.1 IDA Parser Log

```
          *** IGES DATA FILE PARSING ***
          ***       AUGUST 1991      ***
          ***   IGES Data Analysis   ***
          ***     (708) 449-3430     ***

  Input file is \9230\q004.igs

  Checking conformance to CALS Class I

  Today is May 6, 1992  9:42 AM

 *** Count of Records Per Section in Data File ***

       Section        Records

       Start              1
       Global             3
       Directory       2342  (   1171 Entities)
       Parameter       1401
       Terminate          1

 *** Start Section From Input File:

ATOS - Graphic.
1

 *** Global Section From Input File:

,,5HS5000,12Hh87000220000,21HAUTO-TROL S5000 V 7.0,11HVERSION 5.1,32,
1
8,23,11,52,,1.0,1,4HINCH,10000,1.000000,13H920427.163218,0.0001,
2
5.990062,,20HAUTO-TROL TECHNOLOGY,6,0;
3

 *** File and Product Name Information ***

    File name from sender     = 'h87000220000'
    File creation Date.Time   = '920427.163218'
 *  Model change Date.Time    = ''
 *  Author                    = ''
    Department                = 'AUTO-TROL TECHNOLOGY'
    Product name from sender  = 'S5000'
 *  Destination product name  = ''
```

```
 *** Parameter Delimiters ***

 *  Delimiter  = ','
 *  Terminator = ';'

 *** Originating System Data ***

    System ID              = 'AUTO-TROL S5000 V 7.0'
    Preprocessor version   = 'VERSION 5.1'
    Specification version = 6 (IGES 4.0)

 *** Precision Levels ***

    Integer bits =    32
    Floating point  -  Exponent =     8  Mantissa =    23
    Double precision - Exponent =    11  Mantissa =    52
NITPICK 1086: Real constant characteristics inconsistent with specifica
version.

 *** Global Model Data ***

    Model scale             =  1.0000E+000
    Unit flag               =  1
    Units                   =  'INCH'
    Line weights            =  10000
    Maximum line thickness  =  1.000000E+000
    Minimum line thickness  =  1.000000E-004
    Granularity             =  1.000000E-004
    Maximum coordinate      =  5.990062E+000

    Drafting standard applicable to original data is not specified.

 **  5 defaulted Global values.
    (*) Indicates a defaulted value.

 ********************************
 *** Entity Parsing Messages ***
 ********************************

  **     0 defaulted Parameter data values.

 *** Message Summary ***

1019: 1 Invalid Global parameters.

 *** Error Summary ***

   0 fatal errors
```

```
   0 severe errors
   0 errors
   0 warnings
   0 cautions
   1 nitpicks
   0 notes

*** Completed Parsing of \9230\q004.igs ***
```

11.2.2 IDA Verifier Log

```
          *** IGES DATA FILE ANALYSIS ***
          ***       AUGUST 1991       ***
          ***   IGES Data Analysis    ***
          ***     (708) 449-3430      ***

 Input file is \9230\q004.igs

 Checking for conformance to CALS Class I

 Today is May 6, 1992  9:44 AM

*** File and Product Name Information ***

   File name from sender     = 'h87000220000'
   File creation Date.Time   = '920427.163218'
   Model change Date.Time    = ''
   Author                    = ''
   Department                = 'AUTO-TROL TECHNOLOGY'
   Product name from sender  = 'S5000'
   Destination product name  = ''

*** Parameter Delimiters ***

   Delimiter  = ','
   Terminator = ';'

*** Originating System Data ***

   System ID              = 'AUTO-TROL S5000 V 7.0'
   Preprocessor version   = 'VERSION 5.1'
   Specification version = 6 (IGES 4.0)

*** Precision levels ***
   Integer bits =    32
   Floating point  -  Exponent =     8  Mantissa =    23
```

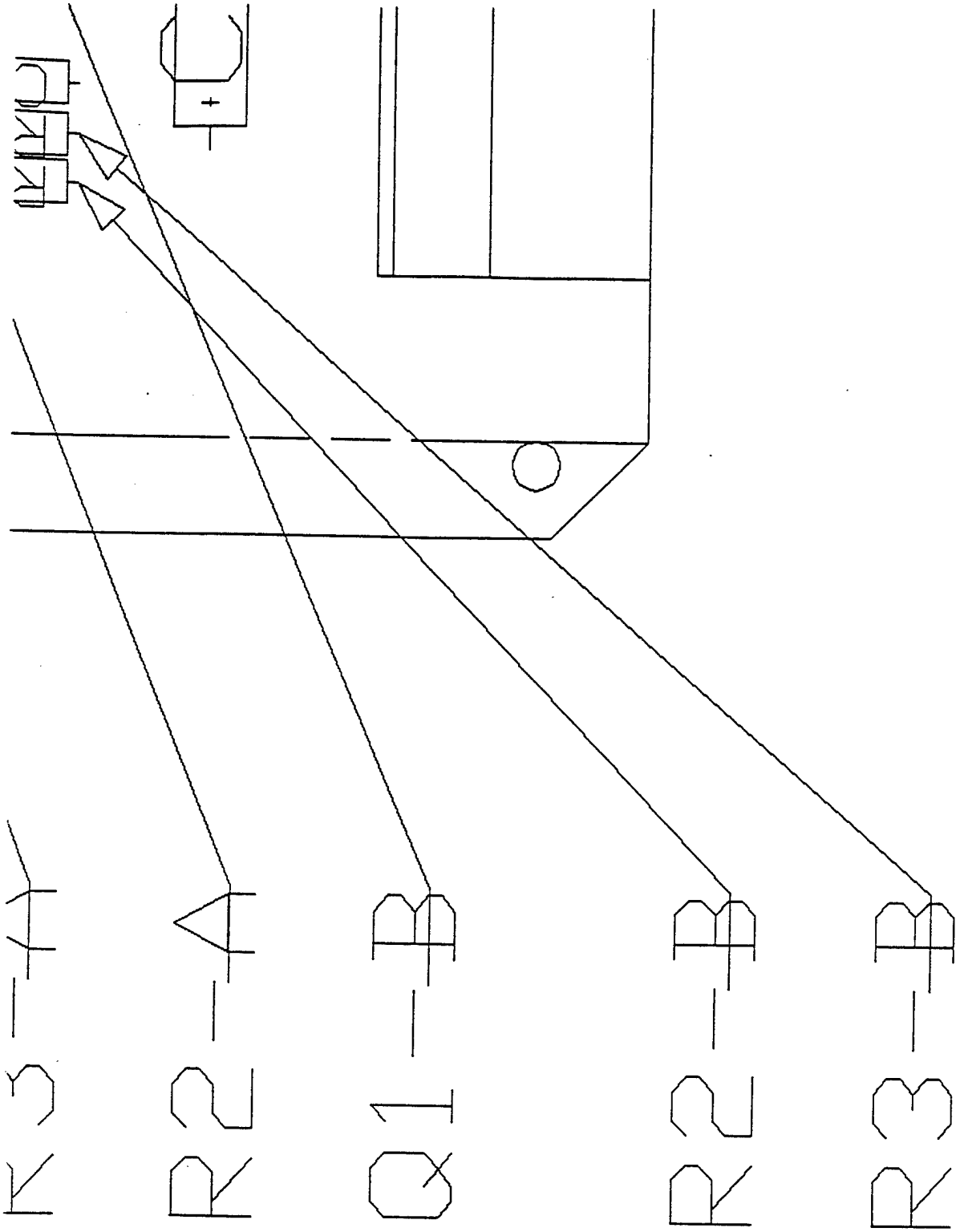
```
   Double precision - Exponent =    11  Mantissa =    52
NITPICK 2329: Real constant characteristics inconsistent with specification version.

 *** Global Model Data ***

   Model scale            =  1.0000E+000
   Unit flag              =  1
   Units                  =  'INCH'
   Line weights           =  10000
   Maximum line thickness =  1.000000E+000
   Minimum line thickness =  1.000000E-004
   Granularity            =  1.000000E-004
   Maximum coordinate     =  5.990062E+000

   Drafting standard applicable to original data is not specified.

 *** Status Flag Summary ***

  Blank status: Visible                    1171
                Blanked                       0

  Independence: Independent                1170
                Physically Subordinate        1
                Logically Subordinate         0
                Totally Subordinate           0

  Entity use:   Geometry                   1021
                Annotation                  150
                Definition                    0
                Other                         0
                Logical/Positional            0
                2D parametric                 0
                Not Specified                 0

  Hierarchy:    Structure DE applies            0
                Subordinate DE applies       1171
                Hierarchy property applies      0
                Not Specified                   0

 *** Entity Occurrence Counts ***

  Entity   Form   Level    Count    Type
  ------   ----   -----    -----    ----

    106      11       2       18    Copious data - Piecewise planar, linear string(2D
    path)
    110       0       1      208    Line
    110       0       2       60
```

```
    110        0        4      188
    110        0        7      545
    110        0        9        1
    124        0        2        1     Transformation matrix
    212        1        8       16     General note - dual stack dimension
    212        1        9      134
ERROR    4031: CALS Class I requires that exactly one drawing be defined.
ERROR    4032: CALS Class I requires that exactly one view be defined.

 *** Entity Count by Level ***

    Level  Count
        1    208
        2     79
        4    188
        7    545
        8     16
        9    135

 *** Labeling Information ***

  -11% of the entities are labeled.

    Unlabeled       0

      Label       Count       Label       Count       Label       Count

      LINE         1002      MATRIX           1    LNR PATH         18
      NOTE          150


 *** Line Fonts Used in Data ***

 100   102   104   106   108   110   112   114

  -     -     -     -     -     -     -     -    Undefined
  -     -     -    18     -  1002     -     -    Solid
  -     -     -     -     -     -     -     -    Dashed
  -     -     -     -     -     -     -     -    Phantom
  -     -     -     -     -     -     -     -    Center-line
  -     -     -     -     -     -     -     -    Dotted
  -     -     -     -     -     -     -     -    User defined

 116   118   120   122   124   125   126   128

  -     -     -     -     -     -     -     -    Undefined
  -     -     -     -     1     -     -     -    Solid
  -     -     -     -     -     -     -     -    Dashed
```

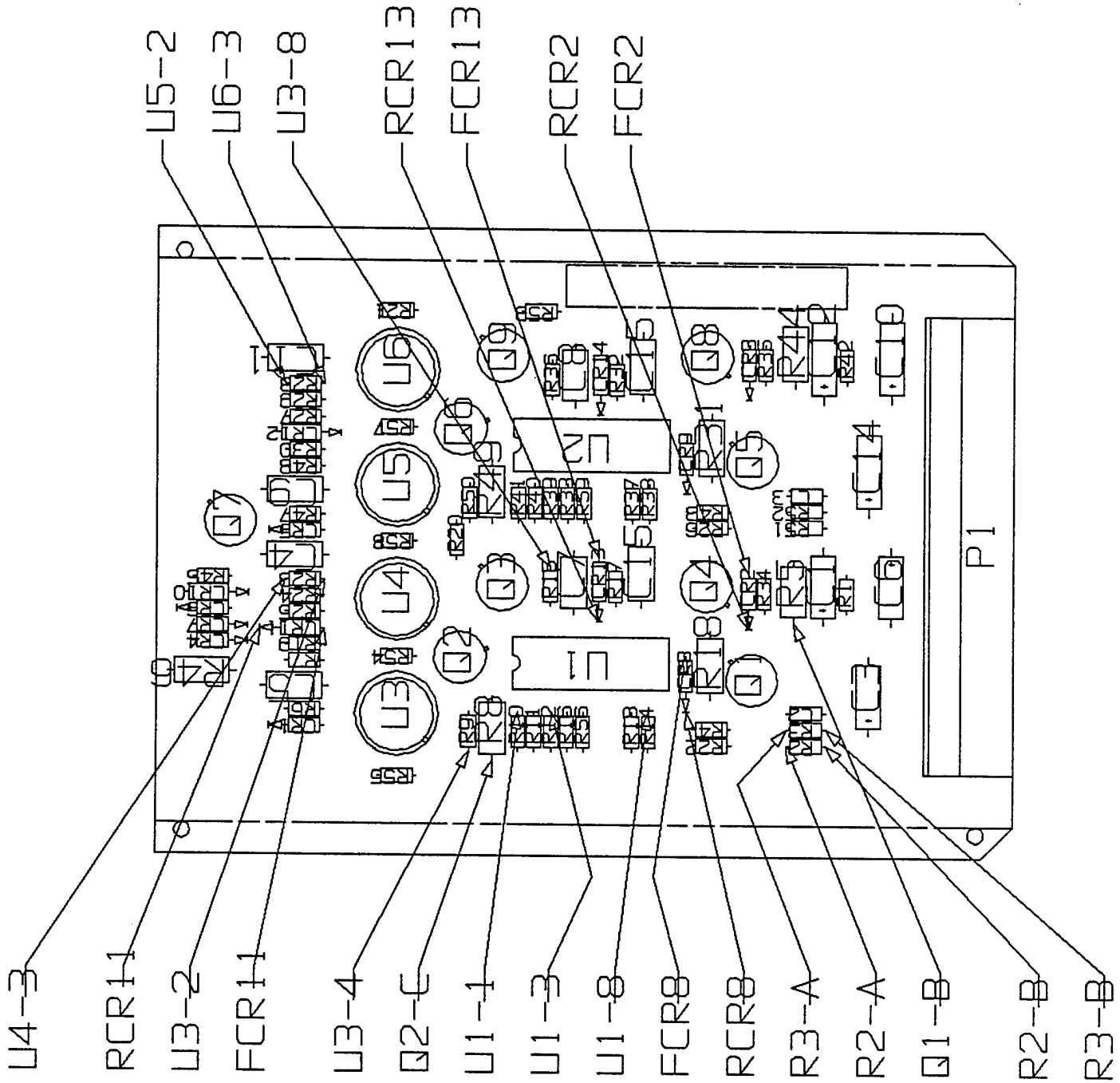
```
  -    -    -    -    -    -    -    -   Phantom
  -    -    -    -    -    -    -    -   Center-line
  -    -    -    -    -    -    -    -   Dotted
  -    -    -    -    -    -    -    -   User defined

 130  132  134  136  138  140  142  144

  -    -    -    -    -    -    -    -   Undefined
  -    -    -    -    -    -    -    -   Solid
  -    -    -    -    -    -    -    -   Dashed
  -    -    -    -    -    -    -    -   Phantom
  -    -    -    -    -    -    -    -   Center-line
  -    -    -    -    -    -    -    -   Dotted
  -    -    -    -    -    -    -    -   User defined

 *** Line Widths Used in Data ***

     Weight       Count      Width

  Defaulted      1171       (0.0001)

 *** Colors Used in Data ***

  Defaulted      1171

 ********************************
 ******  ENTITY ANALYSIS  ******
 ********************************

 *** Entity type: 106

ERROR   4045: Illegal level for CALS Class I specified at D     13.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     13.
ERROR   4045: Illegal level for CALS Class I specified at D     15.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     15.
ERROR   4045: Illegal level for CALS Class I specified at D     17.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     17.
ERROR   4045: Illegal level for CALS Class I specified at D    135.
ERROR   4045: Messages regarding illegal levels suppressed.
ERROR   4025: Messages regarding non-zero matrix pointers suppressed.

 *** Entity type: 110

  --  1002 lines averaging 1.722544E-001 units --

 *** Entity type: 124

1 transformation matrices, 0 non-zero translations.
```

```
 *** Entity type: 212

       150 text strings in data file.
       Average text aspect ratio in file is 1.0000000.
       Minimum text aspect ratio in file is 1.0000000.
       Maximum text aspect ratio in file is 1.0000000.

       FONTS USED IN FILE

       FONT    COUNT    NAME

          1      150    Default ASCII Style

 *** Message Summary ***

4000: 2 Miscelaneous CALS messages
4013: 876 Non-zero matrix pointers
4020: 1170 Illegal levels

 *** Error Summary ***

   0 fatal errors
   0 severe errors
2048 errors
   0 warnings
   0 cautions
   1 nitpicks
   0 notes

 *** End of Analysis of \9230\q004.igs ***
```

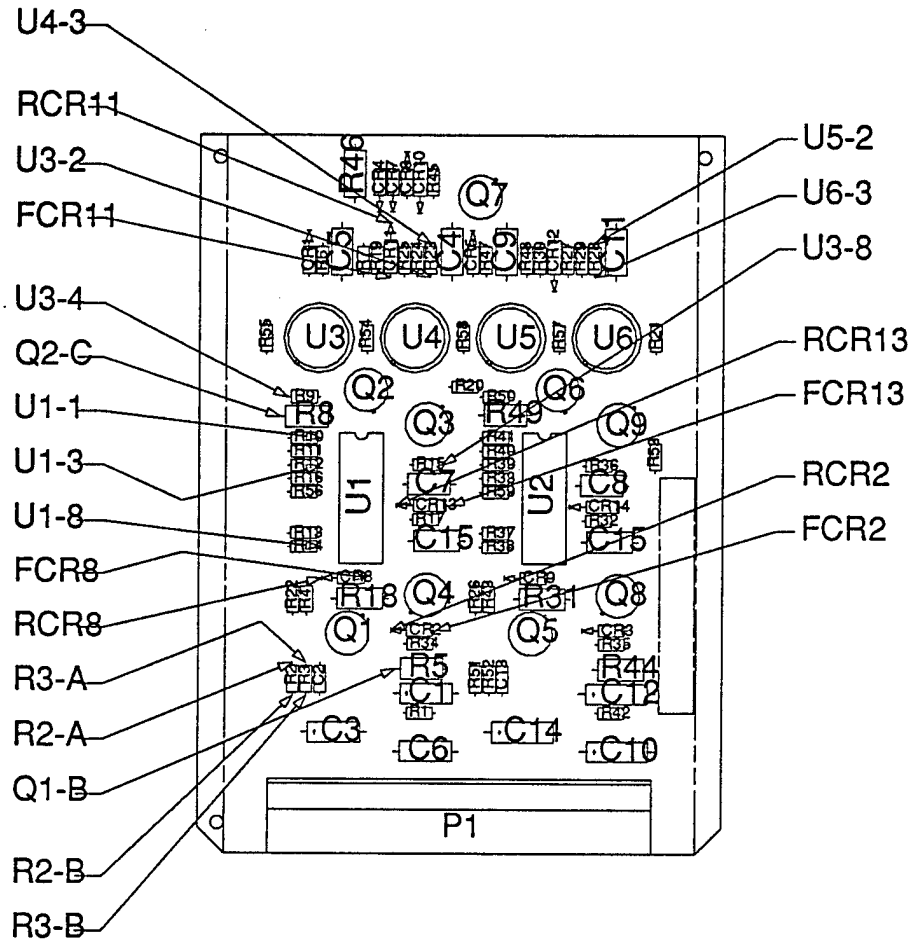
11.2.3 AutoCAD R11 - Detail



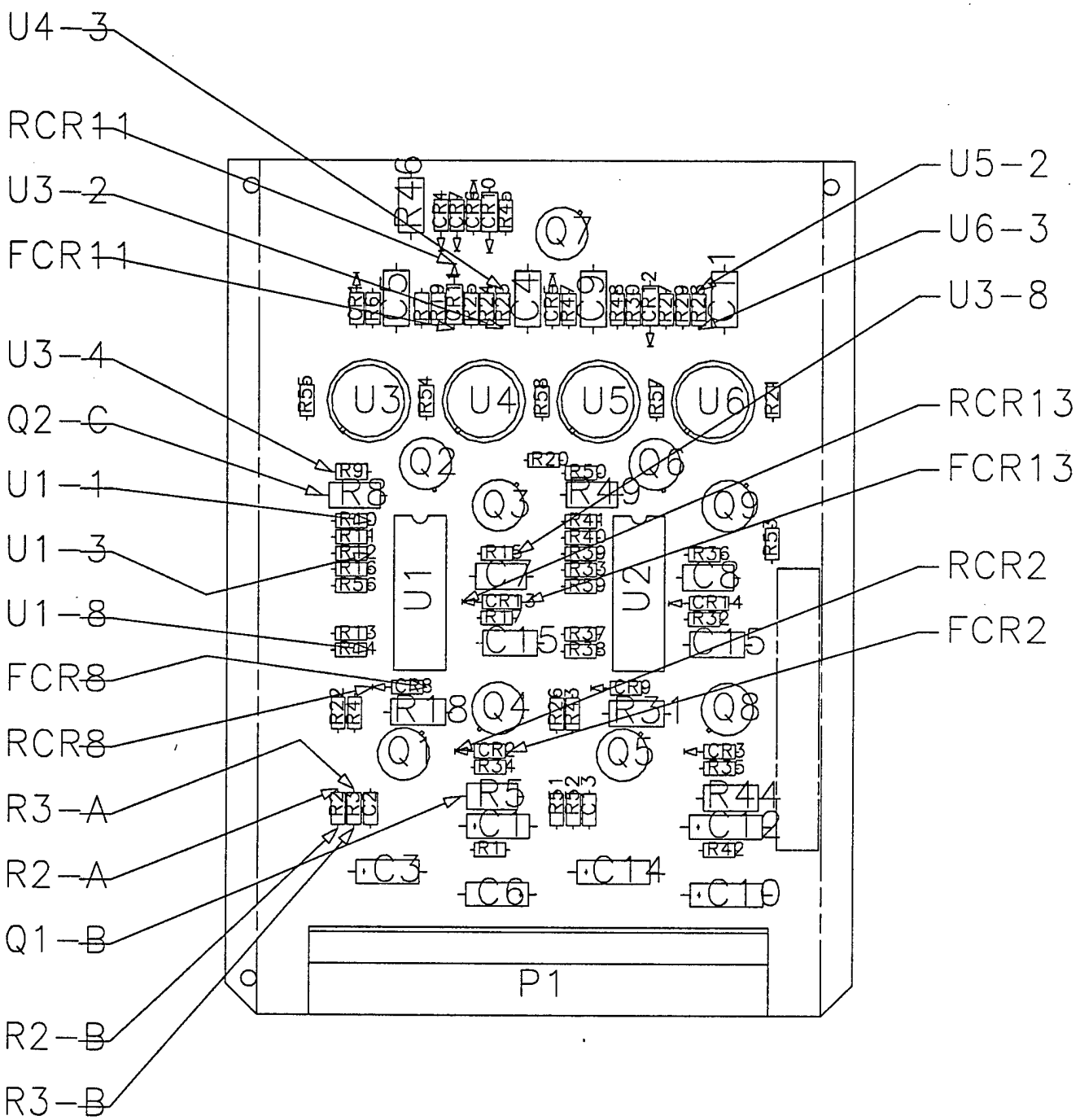
11.2.4 Cadkey V4.06



11.2.5 IGESVIEW



11.2.6 Preview



11.3 D001Q007

11.3.1 IDA Parser Log

```
          *** IGES DATA FILE PARSING ***
          ***       AUGUST 1991      ***
          ***   IGES Data Analysis   ***
          ***     (708) 449-3430     ***

  Input file is \9230\q007.igs

  Checking conformance to CALS Class I

  Today is May 6, 1992  9:43 AM

 *** Count of Records Per Section in Data File ***

       Section        Records

       Start              1
       Global             3
       Directory        274   (    137 Entities)
       Parameter        217
       Terminate          1

 *** Start Section From Input File:

ATOS - Graphic.                                                        S      1

 *** Global Section From Input File:

,,5HS5000,12Hh89000610000,21HAUTO-TROL S5000 V 7.0,11HVERSION 5.1,32,  G      1
8,23,11,52,,1.0,1,4HINCH,10000,1.000000,13H920427.163632,0.0001,       G      2
6.620870,,20HAUTO-TROL TECHNOLOGY,6,0;                                 G      3

 *** File and Product Name Information ***

    File name from sender     = 'h89000610000'
    File creation Date.Time   = '920427.163632'
 *  Model change Date.Time    = ''
 *  Author                    = ''
    Department                = 'AUTO-TROL TECHNOLOGY'
    Product name from sender  = 'S5000'
 *  Destination product name  = ''
```

```
 *** Parameter Delimiters ***

 *  Delimiter  = ','
 *  Terminator = ';'

 *** Originating System Data ***

    System ID              = 'AUTO-TROL S5000 V 7.0'
    Preprocessor version   = 'VERSION 5.1'
    Specification version = 6 (IGES 4.0)

 *** Precision Levels ***

    Integer bits =    32
    Floating point  -  Exponent =     8  Mantissa =    23
    Double precision - Exponent =    11  Mantissa =    52
NITPICK 1086: Real constant characteristics inconsistent with specification version.

 *** Global Model Data ***

    Model scale             =  1.0000E+000
    Unit flag               =  1
    Units                   =  'INCH'
    Line weights            =  10000
    Maximum line thickness  =  1.000000E+000
    Minimum line thickness  =  1.000000E-004
    Granularity             =  1.000000E-004
    Maximum coordinate      =  6.620870E+000

    Drafting standard applicable to original data is not specified.

 **  5 defaulted Global values.
    (*) Indicates a defaulted value.

 ********************************
 *** Entity Parsing Messages ***
 ********************************

  **     0 defaulted Parameter data values.

 *** Message Summary ***

1019: 1 Invalid Global parameters.

 *** Error Summary ***

   0 fatal errors
   0 severe errors
```

```
   0 errors
   0 warnings
   0 cautions
   1 nitpicks
   0 notes

*** Completed Parsing of \9230\q007.igs ***
```

11.3.2 IDA Verifier Log

```
          *** IGES DATA FILE ANALYSIS ***
          ***       AUGUST 1991       ***
          ***   IGES Data Analysis    ***
          ***     (708) 449-3430      ***

  Input file is \9230\q007.igs

  Checking for conformance to CALS Class I

  Today is May 6, 1992  9:44 AM

 *** File and Product Name Information ***

    File name from sender     = 'h89000610000'
    File creation Date.Time   = '920427.163632'
    Model change Date.Time    = ''
    Author                    = ''
    Department                = 'AUTO-TROL TECHNOLOGY'
    Product name from sender  = 'S5000'
    Destination product name  = ''

 *** Parameter Delimiters ***

    Delimiter  = ','
    Terminator = ';'

 *** Originating System Data ***

    System ID              = 'AUTO-TROL S5000 V 7.0'
    Preprocessor version   = 'VERSION 5.1'
    Specification version = 6 (IGES 4.0)

 *** Precision levels ***
    Integer bits =    32
    Floating point  -  Exponent =     8  Mantissa =    23
    Double precision - Exponent =    11  Mantissa =    52
NITPICK 2329: Real constant characteristics inconsistent with specification version.
```

*** Global Model Data ***

Model scale	=	1.0000E+000
Unit flag	=	1
Units	=	'INCH'
Line weights	=	10000
Maximum line thickness	=	1.000000E+000
Minimum line thickness	=	1.000000E-004
Granularity	=	1.000000E-004
Maximum coordinate	=	6.620870E+000

Drafting standard applicable to original data is not specified.

*** Status Flag Summary ***

Blank status:	Visible	137
	Blanked	0
Independence:	Independent	132
	Physically Subordinate	5
	Logically Subordinate	0
	Totally Subordinate	0
Entity use:	Geometry	96
	Annotation	41
	Definition	0
	Other	0
	Logical/Positional	0
	2D parametric	0
	Not Specified	0
Hierarchy:	Structure DE applies	0
	Subordinate DE applies	137
	Hierarchy property applies	0
	Not Specified	0

*** Entity Occurrence Counts ***

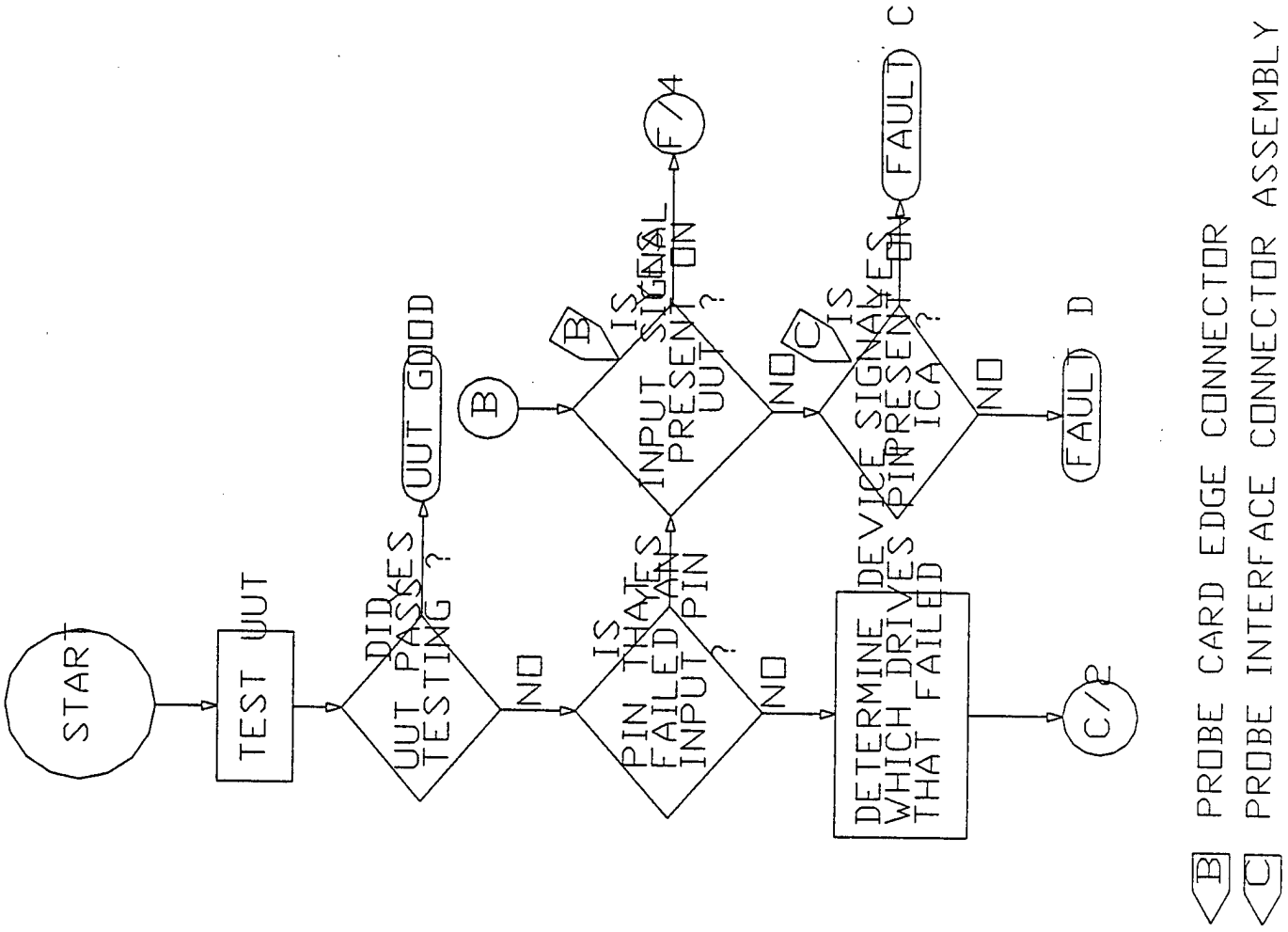
Entity	Form	Level	Count	Type
106	11	2	19	Copious data - Piecewise planar, linear string(2D path)
110	0	1	20	Line
110	0	2	54	
124	0	2	1	Transformation matrix
212	1	8	41	General note - dual stack dimension

```
   402       7       8       2     Group without back-pointers instance
ERROR   4031: CALS Class I requires that exactly one drawing be defined.
ERROR   4032: CALS Class I requires that exactly one view be defined.

 *** Entity Count by Level ***

    Level  Count
        1     20
        2     74
        8     43

 *** Labeling Information ***

  100% of the entities are labeled.

    Unlabeled       0

      Label       Count       Label       Count       Label       Count

      NOTE         41    LNR PATH         19      MATRIX         1
      LINE         74       GROUP          2

 *** Line Fonts Used in Data ***

 100   102   104   106   108   110   112   114

  -     -     -     -     -     -     -     -    Undefined
  -     -     -    19     -    74     -     -    Solid
  -     -     -     -     -     -     -     -    Dashed
  -     -     -     -     -     -     -     -    Phantom
  -     -     -     -     -     -     -     -    Center-line
  -     -     -     -     -     -     -     -    Dotted
  -     -     -     -     -     -     -     -    User defined

 116   118   120   122   124   125   126   128

  -     -     -     -     -     -     -     -    Undefined
  -     -     -     -     1     -     -     -    Solid
  -     -     -     -     -     -     -     -    Dashed
  -     -     -     -     -     -     -     -    Phantom
  -     -     -     -     -     -     -     -    Center-line
  -     -     -     -     -     -     -     -    Dotted
  -     -     -     -     -     -     -     -    User defined

 130   132   134   136   138   140   142   144

  -     -     -     -     -     -     -     -    Undefined
  -     -     -     -     -     -     -     -    Solid
```

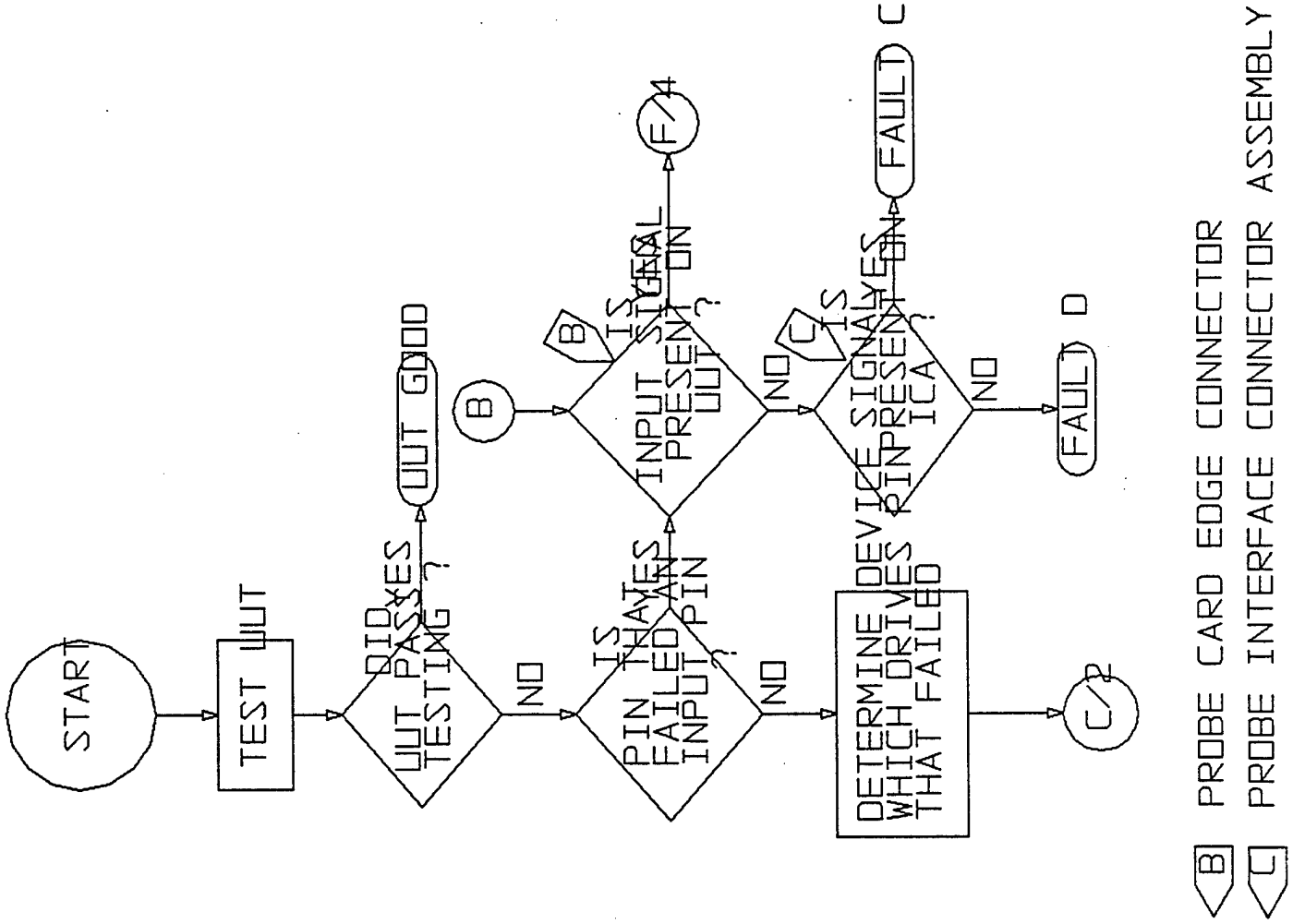
```
  -    -    -    -    -    -    -    -   Dashed
  -    -    -    -    -    -    -    -   Phantom
  -    -    -    -    -    -    -    -   Center-line
  -    -    -    -    -    -    -    -   Dotted
  -    -    -    -    -    -    -    -   User defined

 *** Line Widths Used in Data ***

     Weight       Count      Width

  Defaulted       137       (0.0001)

 *** Colors Used in Data ***

  Defaulted       137

 ********************************
 ******  ENTITY ANALYSIS  ******
 ********************************

 *** Entity type: 106

ERROR   4045: Illegal level for CALS Class I specified at D      7.
ERROR   4045: Illegal level for CALS Class I specified at D     11.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     11.
ERROR   4045: Illegal level for CALS Class I specified at D     15.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     15.
ERROR   4025: Messages regarding non-zero matrix pointers suppressed.

 *** Entity type: 110

  --     74 lines averaging 2.414097E-001 units --

 *** Entity type: 124

1 transformation matrices, 0 non-zero translations.

 *** Entity type: 212

       41 text strings in data file.
       Average text aspect ratio in file is 1.0000000.
       Minimum text aspect ratio in file is 1.0000000.
       Maximum text aspect ratio in file is 1.0000000.

       FONTS USED IN FILE

       FONT    COUNT    NAME
```

```
          1      41   Default ASCII Style

 *** Entity type: 402

ERROR   4038: Entity type is not allowed in CALS Class I.

 *** Message Summary ***

4000: 2 Miscelaneous CALS messages
4013: 75 Non-zero matrix pointers
4018: 1 Illegal entity types
4020: 134 Illegal levels

 *** Error Summary ***

   0 fatal errors
   0 severe errors
 212 errors
   0 warnings
   0 cautions
   1 nitpicks
   0 notes

 *** End of Analysis of \9230\q007.igs ***
```

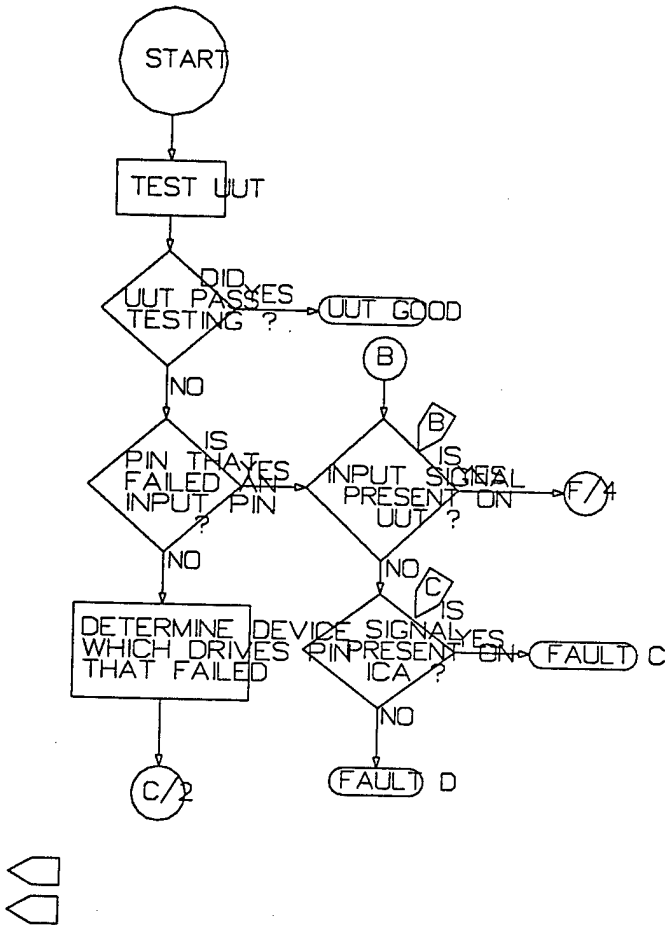
11.3.3 AutoCAD R11



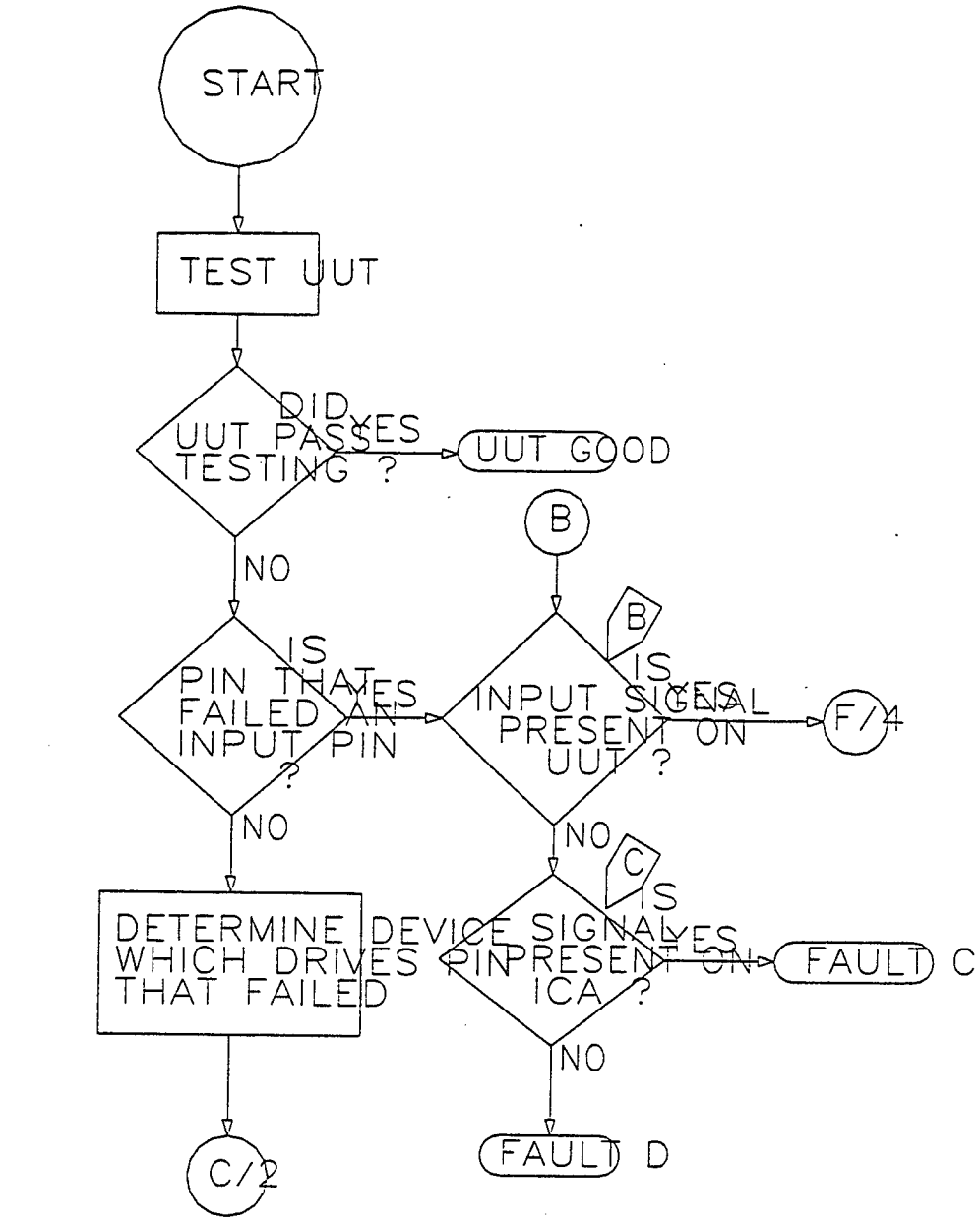
11.3.4 Cadkey V4.06



11.3.5 IGESVIEW



11.3.6 Preview



B PROBE CARD EDGE CONNECTOR

C PROBE INTERFACE CONNECTOR ASSEMBLY

11.4 D001Q010

11.4.1 IDA Parser Log

```
          *** IGES DATA FILE PARSING ***
          ***       AUGUST 1991      ***
          ***   IGES Data Analysis   ***
          ***     (708) 449-3430     ***

  Input file is \9230\q010.igs

  Checking conformance to CALS Class I

  Today is May 6, 1992  9:43 AM

 *** Count of Records Per Section in Data File ***

       Section        Records

       Start              1
       Global             3
       Directory        178   (     89 Entities)
       Parameter        127
       Terminate          1


 *** Start Section From Input File:

ATOS - Graphic.                                                          S      1

 *** Global Section From Input File:

,,5HS5000,12Hh89000640000,21HAUTO-TROL S5000 V 7.0,11HVERSION 5.1,32,   G      1
8,23,11,52,,1.0,1,4HINCH,10000,1.000000,13H920427.163806,0.0001,         G      2
4.847920,,20HAUTO-TROL TECHNOLOGY,6,0;                                   G      3

 *** File and Product Name Information ***

    File name from sender     = 'h89000640000'
    File creation Date.Time   = '920427.163806'
 *  Model change Date.Time    = ''
 *  Author                    = ''
    Department                = 'AUTO-TROL TECHNOLOGY'
    Product name from sender  = 'S5000'
 *  Destination product name  = ''
```

```
 *** Parameter Delimiters ***

 *  Delimiter  = ','
 *  Terminator = ';'

 *** Originating System Data ***

    System ID              = 'AUTO-TROL S5000 V 7.0'
    Preprocessor version   = 'VERSION 5.1'
    Specification version = 6 (IGES 4.0)

 *** Precision Levels ***

    Integer bits =    32
    Floating point  -  Exponent =     8  Mantissa =    23
    Double precision - Exponent =    11  Mantissa =    52
NITPICK 1086: Real constant characteristics inconsistent with specification version.

 *** Global Model Data ***

    Model scale            =  1.0000E+000
    Unit flag              =  1
    Units                  =  'INCH'
    Line weights           =  10000
    Maximum line thickness =  1.000000E+000
    Minimum line thickness =  1.000000E-004
    Granularity            =  1.000000E-004
    Maximum coordinate     =  4.847920E+000

    Drafting standard applicable to original data is not specified.

 **  5 defaulted Global values.
    (*) Indicates a defaulted value.

 ******************************
 *** Entity Parsing Messages ***
 ******************************

  **     0 defaulted Parameter data values.

 *** Message Summary ***

1019: 1 Invalid Global parameters.

 *** Error Summary ***

   0 fatal errors
   0 severe errors
```

```
   0 errors
   0 warnings
   0 cautions
   1 nitpicks
   0 notes

*** Completed Parsing of \9230\q010.igs ***
```

11.4.2 IDA Verifier Log

```
          *** IGES DATA FILE ANALYSIS ***
          ***       AUGUST 1991      ***
          ***   IGES Data Analysis   ***
          ***     (708) 449-3430     ***

 Input file is \9230\q010.igs

 Checking for conformance to CALS Class I

 Today is May 6, 1992  9:44 AM

*** File and Product Name Information ***

   File name from sender     = 'h89000640000'
   File creation Date.Time   = '920427.163806'
   Model change Date.Time    = ''
   Author                    = ''
   Department                = 'AUTO-TROL TECHNOLOGY'
   Product name from sender  = 'S5000'
   Destination product name  = ''

*** Parameter Delimiters ***

   Delimiter  = ','
   Terminator = ';'

*** Originating System Data ***

   System ID              = 'AUTO-TROL S5000 V 7.0'
   Preprocessor version   = 'VERSION 5.1'
   Specification version = 6 (IGES 4.0)

*** Precision levels ***
   Integer bits =    32
   Floating point  -  Exponent =     8  Mantissa =    23
   Double precision - Exponent =    11  Mantissa =    52
```

NITPICK 2329: Real constant characteristics inconsistent with specification version.

*** Global Model Data ***

Model scale	=	1.0000E+000
Unit flag	=	1
Units	=	'INCH'
Line weights	=	10000
Maximum line thickness	=	1.000000E+000
Minimum line thickness	=	1.000000E-004
Granularity	=	1.000000E-004
Maximum coordinate	=	4.847920E+000

Drafting standard applicable to original data is not specified.

*** Status Flag Summary ***

Blank status:	Visible	89
	Blanked	0
Independence:	Independent	88
	Physically Subordinate	1
	Logically Subordinate	0
	Totally Subordinate	0
Entity use:	Geometry	67
	Annotation	22
	Definition	0
	Other	0
	Logical/Positional	0
	2D parametric	0
	Not Specified	0
Hierarchy:	Structure DE applies	0
	Subordinate DE applies	89
	Hierarchy property applies	0
	Not Specified	0

*** Entity Occurrence Counts ***

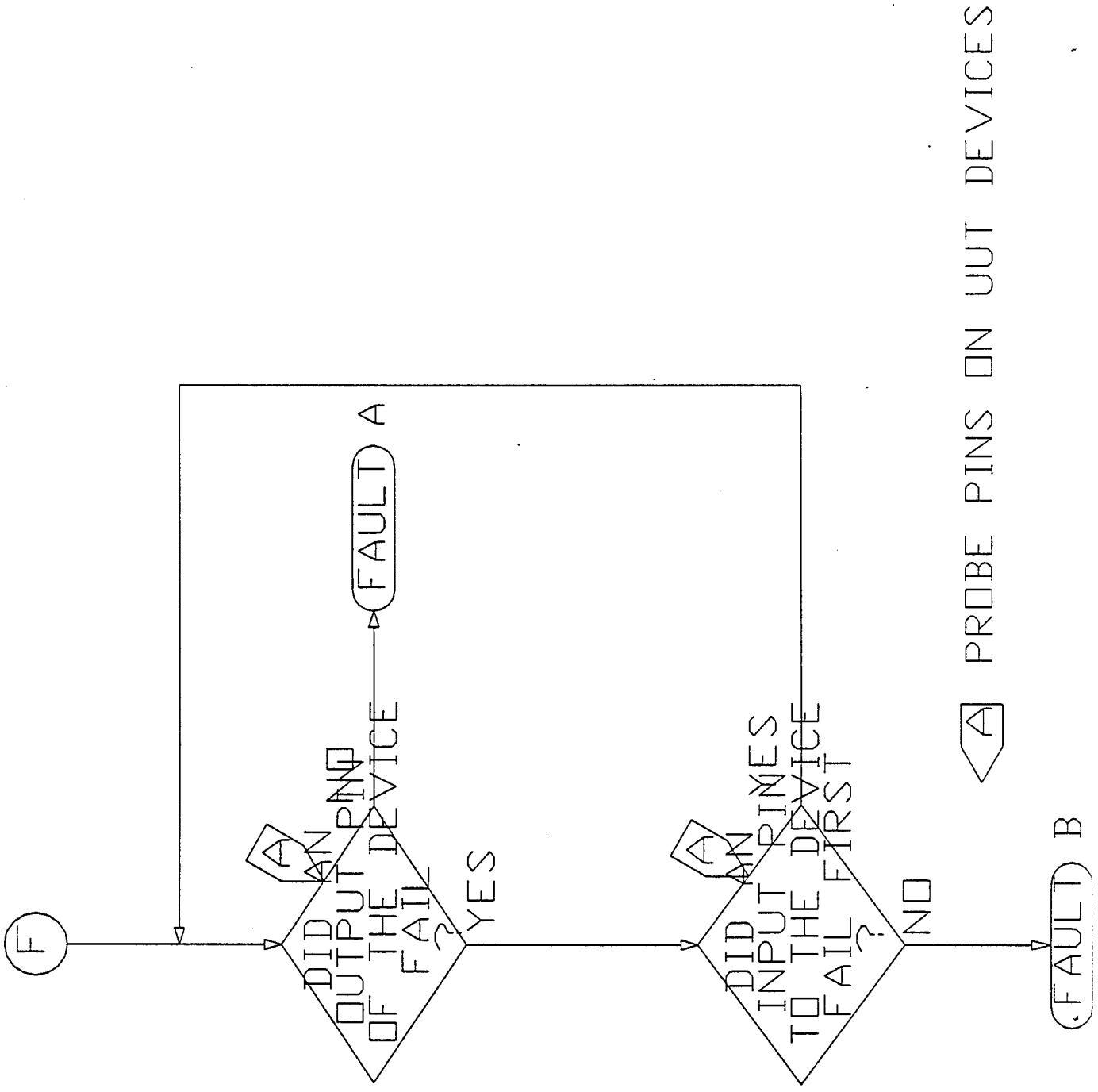
Entity	Form	Level	Count	Type
106	11	2	9	Copious data - Piecewise planar, linear string(2D linear path)
110	0	1	31	Line
110	0	2	26	

```
   124        0        2        1     Transformation matrix
   212        1        8       22     General note - dual stack dimension
ERROR   4031: CALS Class I requires that exactly one drawing be defined.
ERROR   4032: CALS Class I requires that exactly one view be defined.

 *** Entity Count by Level ***

   Level  Count
       1     31
       2     36
       8     22

 *** Labeling Information ***

  100% of the entities are labeled.

   Unlabeled       0

     Label       Count       Label       Count       Label       Count

   MATRIX            1   LNR PATH           9        LINE          57
     NOTE           22

 *** Line Fonts Used in Data ***

100  102  104  106  108  110  112  114

 -    -    -    -    -    -    -    -   Undefined
 -    -    -    9    -   57    -    -   Solid
 -    -    -    -    -    -    -    -   Dashed
 -    -    -    -    -    -    -    -   Phantom
 -    -    -    -    -    -    -    -   Center-line
 -    -    -    -    -    -    -    -   Dotted
 -    -    -    -    -    -    -    -   User defined

116  118  120  122  124  125  126  128

 -    -    -    -    -    -    -    -   Undefined
 -    -    -    -    1    -    -    -   Solid
 -    -    -    -    -    -    -    -   Dashed
 -    -    -    -    -    -    -    -   Phantom
 -    -    -    -    -    -    -    -   Center-line
 -    -    -    -    -    -    -    -   Dotted
 -    -    -    -    -    -    -    -   User defined
```

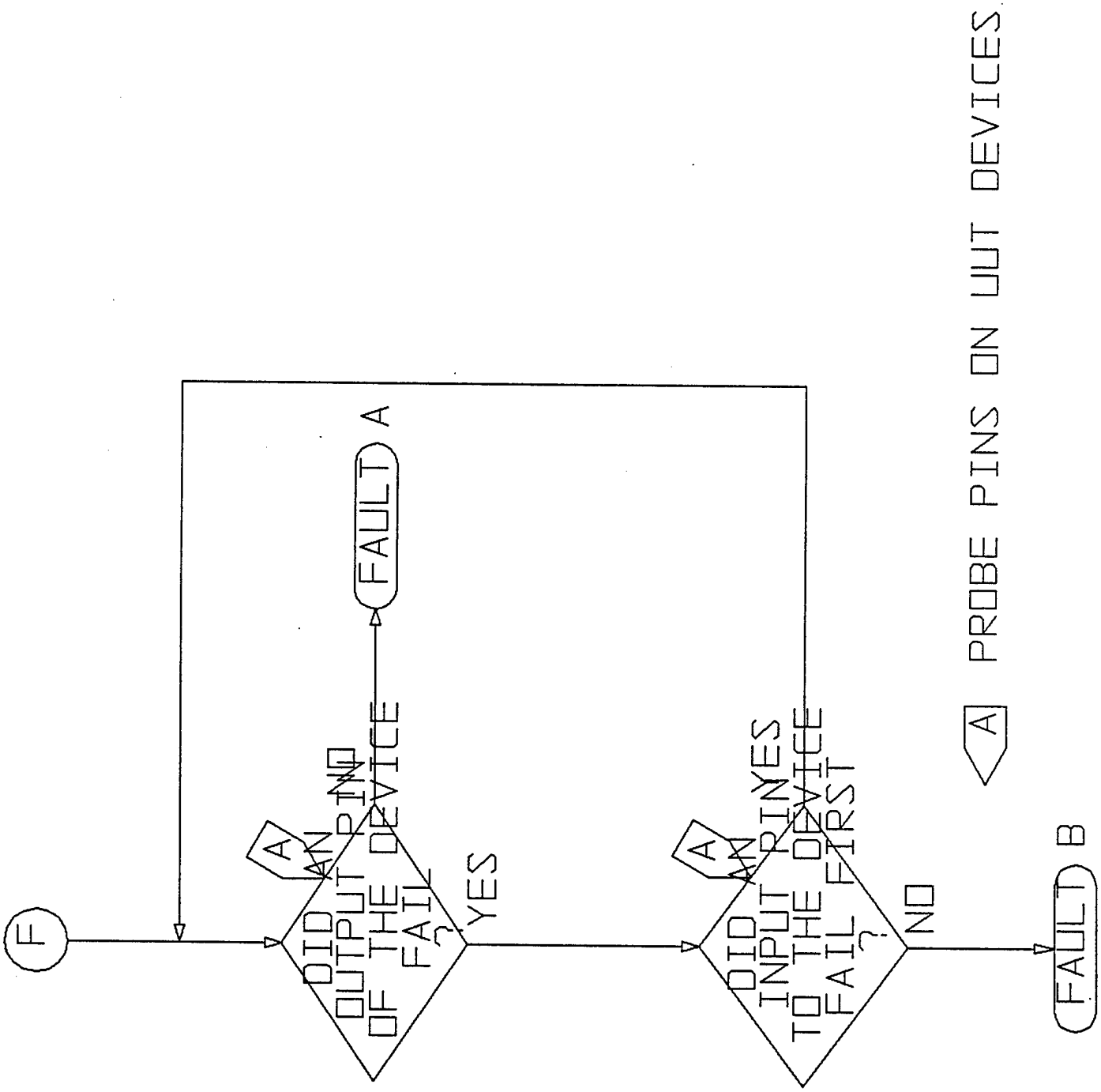
```
 130  132  134  136  138  140  142  144

  -    -    -    -    -    -    -    -   Undefined
  -    -    -    -    -    -    -    -   Solid
  -    -    -    -    -    -    -    -   Dashed
  -    -    -    -    -    -    -    -   Phantom
  -    -    -    -    -    -    -    -   Center-line
  -    -    -    -    -    -    -    -   Dotted
  -    -    -    -    -    -    -    -   User defined

 *** Line Widths Used in Data ***

     Weight       Count      Width

  Defaulted        89       (0.0001)

 *** Colors Used in Data ***

  Defaulted        89


 ********************************
 ******  ENTITY ANALYSIS  ******
 ********************************


 *** Entity type: 106

ERROR   4045: Illegal level for CALS Class I specified at D      3.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D      3.
ERROR   4045: Illegal level for CALS Class I specified at D      5.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D      5.

 *** Entity type: 110

ERROR   4045: Illegal level for CALS Class I specified at D     11.
ERROR   4025: CALS Class I requires matrix pointer to be zero at D     11.
ERROR   4045: Messages regarding illegal levels suppressed.
ERROR   4025: Messages regarding non-zero matrix pointers suppressed.
  --    57 lines averaging 4.541820E-001 units --

 *** Entity type: 124

1 transformation matrices, 0 non-zero translations.

 *** Entity type: 212

       22 text strings in data file.
```

```
      Average text aspect ratio in file is 1.0000000.
      Minimum text aspect ratio in file is 1.0000000.
      Maximum text aspect ratio in file is 1.0000000.

      FONTS USED IN FILE

      FONT    COUNT    NAME

         1       22    Default ASCII Style

 *** Message Summary ***

4000: 2 Miscelaneous CALS messages
4013: 61 Non-zero matrix pointers
4020: 88 Illegal levels

 *** Error Summary ***

   0 fatal errors
   0 severe errors
 151 errors
   0 warnings
   0 cautions
   1 nitpicks
   0 notes

 *** End of Analysis of \9230\q010.igs ***
```

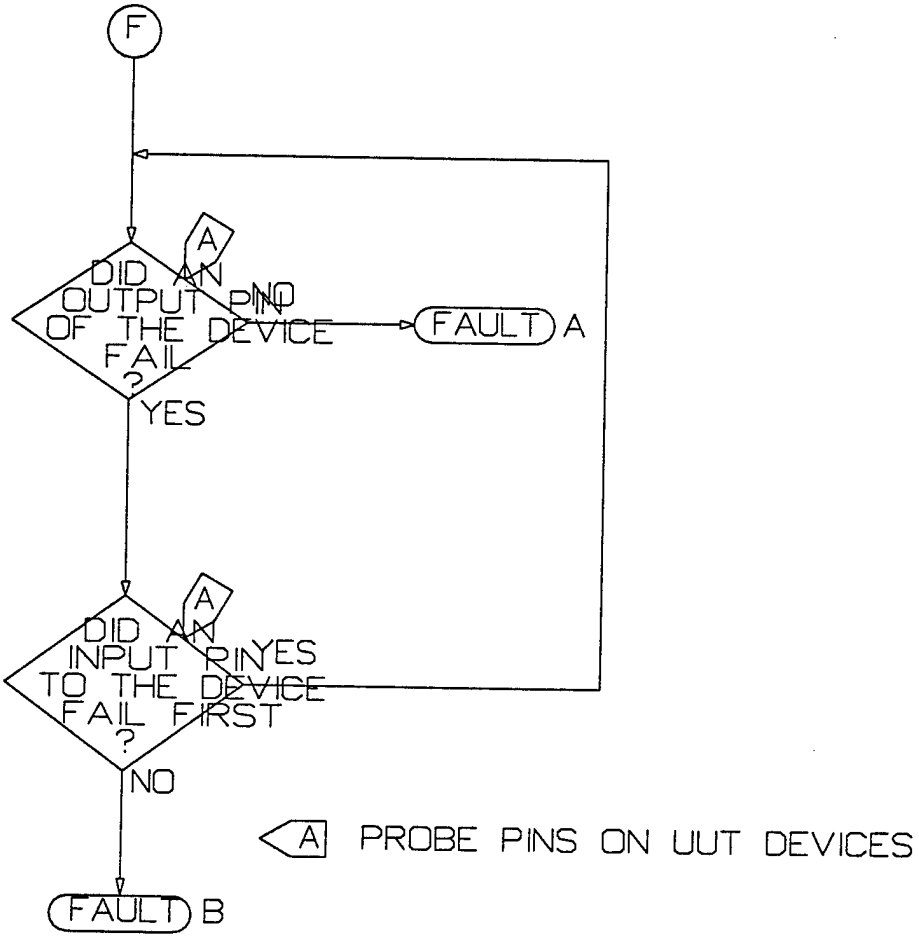
11.4.3 AutoCAD R11



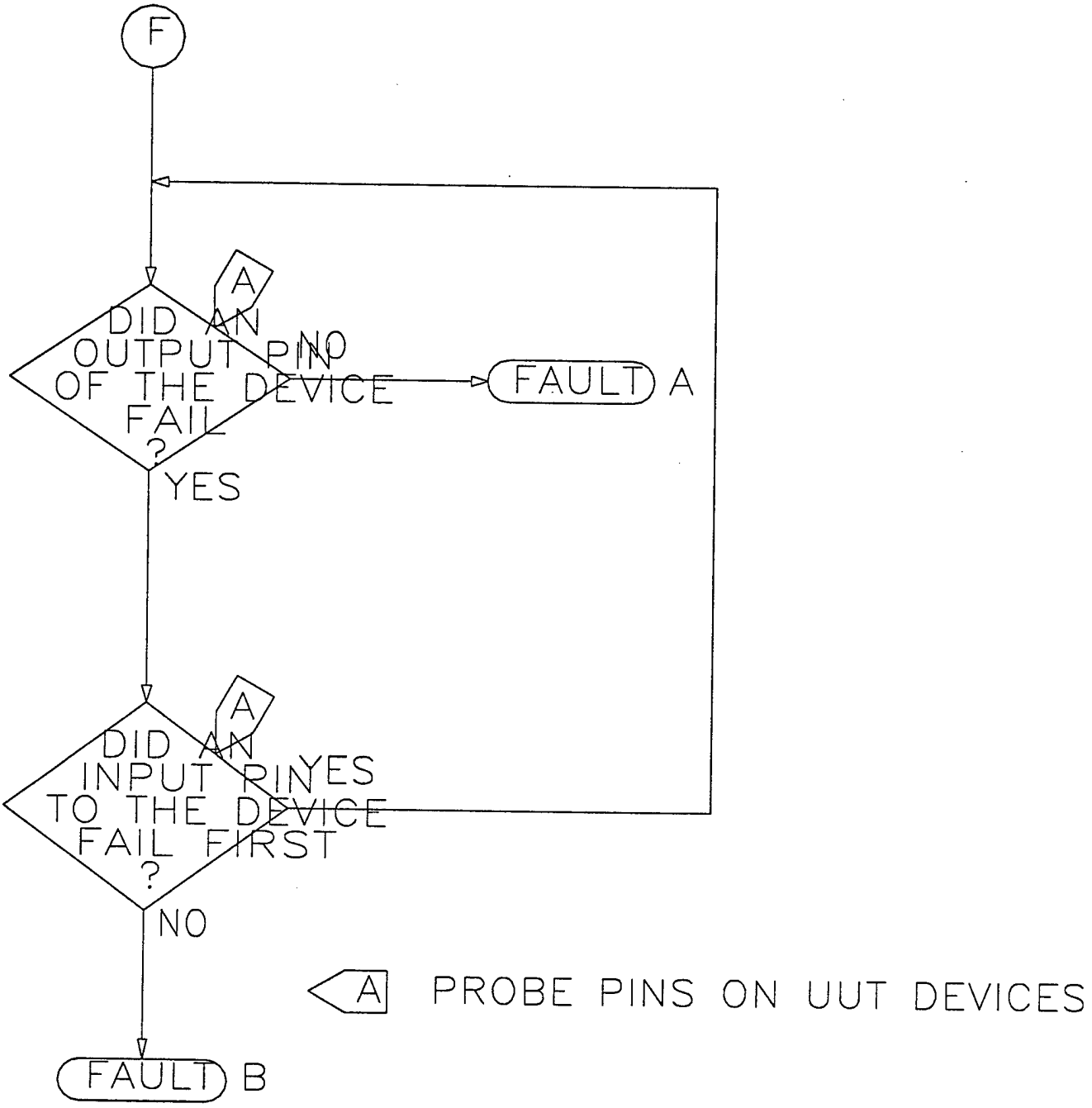
11.4.4 Cadkey V4.06



11.4.5 IGESVIEW



11.4.6 Preview



12. Appendix D - D001Q005 Detail

12.1 Detail IGES File

```
                                                                        S      1
,,5HS5000,12Hh87000230000,21HAUTO-TROL S5000 V 7.0,11HVERSION 5.1,32,8, G      1
23,11,52,,1.0D0,1,4HINCH,10000,1.0D0,13H920427.163440,0.0001D0,         G      2
5.422762D0,,20HAUTO-TROL TECHNOLOGY,6,;                                 G      3
       0       1       0       0       0       0       0       0       0D     1
       0       0       0       1       0                               D      2
     110       2       0       1       4       0       0       0      1D      3
     110       0       0       1       0                       LINE    978D    4
     212       3       0       1       8       0       0       0      101D    5
     212       0       0       2       1                       NOTE    147D    6
     110       5       0       1       4       0       9       0      1D      7
     110       0       0       1       0                       LINE    979D    8
     124       6       0       1       2       0       0       0    10001D    9
     124       0       0       2       0                     MATRIX    1D     10
0;                                                                      1P     1
110,1.708681D0,1.170777D0,0.0D0,-0.683675D0,2.583365D0,0.0D0;           3P     2
212,1,5,0.78125D0,0.15625D0,1,1.570796D0,0.0D0,0,0,-1.387797D0,         5P     3
2.532137D0,0.0D0,5HR51-B;                                               5P     4
110,-0.683675D0,2.583365D0,0.0D0,-0.808675D0,2.583365D0,0.0D0;          7P     5
124,1.0D0,0.0D0,0.0D0,0.0D0,0.0D0,1.0D0,0.0D0,0.0D0,0.0D0,0.0D0,       9P     6
1.0D0,0.0D0;                                                            9P     7
S      1G      3D      10P      7                                       T      1
```

12.2 Harvard Graphics Detail